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FEMA CONTRACT NO. 01-78-C-0269 ✓

FEMA WORK UNIT NO. 2511-C

LEVEL



**OPERATORS MANUAL
PROTO-TYPE
HEAVY RESCUE
FIRE FIGHTING VEHICLE**

FOR

FEDERAL EMERGENCY MANAGEMENT AGENCY

WASHINGTON, D.C. 20472

SEPTEMBER 1980

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OPERATOR'S MANUAL.

PROTOTYPE
HEAVY RESCUE/FIRE FIGHTING VEHICLE.

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FINAL REPORT

FEMA CONTRACT NO. 01-78-C-0269
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FEMA 2500 DISTRIBUTION LIST

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for

Federal Emergency Management Agency
Washington, D.C. 20472

REVIEW NOTICE:

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INTRODUCTION

Heavy rescue is a commonly recognized weakness in our nation's disaster relief and recovery capability. Recent development of easily portable, lightweight rescue appliances makes feasible the provision of heavy rescue capability on an immediate response basis.

In recognition of these factors, the Federal Emergency Management Agency approved a \$60,000 grant and the California Legislature appropriated \$30,000 to the California Office of Emergency Services Fire and Rescue Division for the development, evaluation, and testing of a prototype interdisciplinary heavy rescue/fire fighting apparatus.

The OES Heavy Rescue/Fire Fighting Unit is a prototype apparatus. It was constructed to provide for practical evaluation and testing of the conceptual feasibility of modular construction and multiple function capability in fire apparatus. Incorporating provisions for heavy rescue, common and specialized fire fighting, and personnel protection for hazardous environments into a single unit of apparatus results in unique design and operating procedures.

Careful adherence to the procedures described in this manual will assure reliability and safety in the operation of the vehicle and its functional components.

Equipment, tools, and outfitting have been provided to accomplish an infinite variety of rescue and fire fighting missions. Proper care, maintenance, and use are essential to personnel safety and reliable performance. Self-contained power and pneumatic devices must be restricted to use by personnel thoroughly trained in their operation and application.

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S E C T I O N I

VEHICLE - TECHNICAL DESCRIPTIONS AND OPERATION

T E C H N I C A L D A T A

V E H I C L E

MAKE: FORD MODEL: C8000, 4WD I.D. #D80QVAJ6286 YEAR: 1978

ENGINE: CAT 3208 SERIAL: #405S64131 ARRANGEMENT: 9N31093

FUEL: DIESEL CAPACITY: 50 GAL. (189 Litre)

LUBRICANT: SE/CC 20W/40 CAPACITY: 12 QT. (11.3 Ltr)

TRANSMISSION: CLARK 397V, 5-SPEED/SYNCHROMESH

FRONT AXLE: FABCO SDA 16, 12,000 LBS (5,200 Kg)

LUBRICANT: SAE 90 CAPACITY: 12 QTS. (11.3 Litres)

REAR AXLE: EATON 18221 (2-SPEED) 22,000 LBS. (10,000 Kg)

LUBRICANT: SAE 140 CAPACITY: 12 QTS. (11.3 Litres)

TRANSFER CASE: FABCO TC 33H

LUBRICANT: EP 90 CAPACITY: 7.5 QTS. (7 Litres)

BRAKES: AIR TIRES: 1100 x 20, 12-PLY

TIRE PRESSURE: FRONT 85 (5.9 bar) PSI REAR: 80 (5.6 bar) PSI

WHEELBASE: 157 INCHES (399 CM) WIDTH: 96 INCHES (243.8 CM)

LENGTH: 305" (775 CM) HEIGHT: 119" (300 CM)

GVWR: 34,000 LBS (15,200 Kg) GVW: 32,500 (18,625 KG)

BATTERY: GROUP 8D (DUAL SYSTEM)

WATER TANK CAPACITY: 567 GAL (2,160 Litres)

VEHICLE OPERATION AND MAINTENANCE



CAB

To accommodate the front wheel drive axle, it was necessary to raise the cab/engine portion of the chassis a full frame height. To facilitate entry and exit, a "stirrup" has been mounted beneath the bumper extension under each door. Hand holds are located under and parallel to the diagonal portion of the wing window.

To enter:

1. Open cab door.
2. While facing forward, place outboard foot into stirrup.
3. Steady yourself by placing inboard hand upon inside wheel housing.
4. Step upward and grasp hand hold with outboard hand.
5. Place inboard foot on cab step.
6. Move inboard hand to a higher convenient position (door jamb, steering wheel).
7. Move onto seat.

SEAT BELTS

Seat belts are provided for three persons. They must be worn at all times when vehicle is operated upon any public highway, street, or way. Design and fastening system are manufacturer's standard equipment.

INSTRUMENTS AND CONTROLS

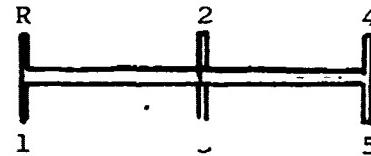
Illustration (I-7) is a graphic representation of the instrument panel and controls for vehicle operation. Clutch, brake treadle, and foot throttle are conventional in placement, arrangement, and operation.

ENGINE STARTING

1. Place transmission in neutral.
2. Disengage clutch (depress pedal).
3. Push throttle pedal to half speed setting.
4. Turn ignition key to start position. If engine fails to start within 30 seconds, release switch. Wait 60 seconds and try again.
5. Do not apply load or increase engine speed until oil pressure has reached normal operating pressure (35-75 psi/5.2 bar).
6. Operate at low load until all systems reach operating temperature. Check all gauges during warm-up.

GEAR SHIFTING

The gear shift lever is conventional in location. Shift pattern is etched into top of gear shift knob and is as illustrated below:



The red button mounted on the right side of the gear shift lever immediately below the knob is the control for the two-speed rear axle. The DOWN position is low range, and UP is high range. Transmission is synchromesh in all forward gears. Double-clutching is NOT required for either up or down shifting. Sequence for SPLIT SHIFTING is:

1 LOW	2 HIGH	3 LOW	4 HIGH	5 LOW	6 HIGH	7 LOW	8 LOW	9 HIGH	10 HIGH
1	1	2	2	3	3	4	5	4	5

To shift from LOW to HIGH range:

1. Pull button UP.
2. Depress clutch concurrently releasing throttle.
3. Release clutch concurrently reapplying throttle.

To shift from HIGH to LOW range:

1. Keep throttle depressed.
2. Push button DOWN.
3. Release throttle -- fully.
4. Reapply throttle.

On steep downgrades, it is advisable to shift down a full gear range rather than down-shifting the two speed rear axle. When engine is under braking compression conditions, it is sometimes unsafe to open throttle sufficiently to effect the high to low range shift. It is good practice to shift to low range before starting descent of steep grade(s).

FRONT AXLE DRIVE:

Front axle drive is operable only with both axles (front and rear) in HIGH range. It should be utilized only for off-road operations on soft or uneven surfaces, and then only when necessary to maintain traction.

To Engage:

1. Vehicle must be stopped.
2. Shift transmission to neutral.
3. Be sure rear axle is in HIGH range.
4. Depress clutch.
5. Move front axle range selector to HIGH.
6. Move front axle drive selector to ENGAGED.
7. Release clutch.

To Disengage:

1. Stop vehicle.
2. Shift transmission to neutral.
3. With clutch depressed, move front axle drive selector to DISENGAGE position.
4. Release clutch.

Precautions:

- Front wheels spin and start bouncing. Stop and start up gently.
- Should tire chains become necessary, they must be installed on the front wheels or front drive must be DISENGAGED.
- Never operate vehicle upon hard or paved surface with front axle ENGAGED.

SERVICE BRAKES

The air brakes are operated by a foot treadle valve. When the treadle valve is opened (depressed downward), air pressure is delivered to brake chambers. Air pressure moves a diaphragm or piston to which a push rod is attached. Push rod movement operates through a slack adjuster to rotate an "S" cam or wedge which forces brake shoe assembly outward against brake drum. Braking force is proportional to volume and pressure of air delivered within limitations of mechanical linkage.

PARKING BRAKE

To apply parking brakes, move the parking brake control lever (I-4) to the ON position. To release, move the lever to OFF.

When the control lever is in the ON position, air is released from parking brake air chamber allowing a powerful coil spring to apply rear wheel brakes. A minimum 60 psi (4.2 bar) air pressure is required to release the brakes (compress the spring). USE FOR PARKING ONLY.

EMERGENCY AIR BRAKE FEATURE

A parallel air circuit and special brake chambers are incorporated into the brake system for emergency operation if pressure is lost in either parking or service brake systems. The system is operational automatically and is controlled by the foot treadle valve. It will provide for TWO full brake applications and ONE release.

ELECTRICAL SYSTEM

A dual battery system is utilized for both the vehicle and pump. The system provides for charging the battery when operating vehicle and/or pumping engine. An ammeter is mounted under dash and immediately right of gear shift lever for reading rate of charge or discharge when pump engine is operating.

Master control switch is located on the firewall under driver's seat. In 1, 2, or BOTH position, all DC circuits to control switches are energized. In

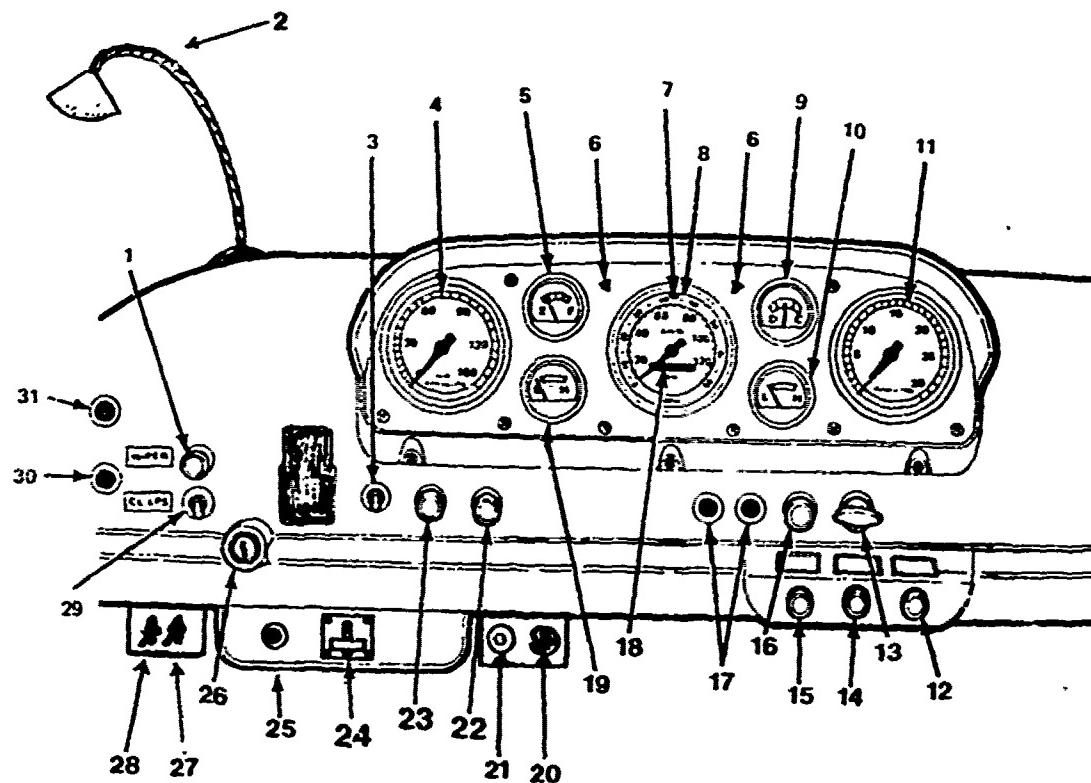
the OFF position, all DC circuits are dead. Switch should be in the BOTH position for starting vehicle engine, then switched to either 1 or 2 position. Suggest 1 on odd numbered days and 2 on even numbered days.

DRIVING

Before moving the vehicle, make a visual check of all tires, under, and around vehicle. Be sure no person, object, or obstruction will be endangered or will endanger the vehicle, its passengers, or payload. After determining that vehicle can be safely moved, enter the cab and proceed with engine starting procedure.

When warm-up and operating checks are complete:

1. Disengage clutch.
2. Shift transmission into lowest gear.
3. Apply service brakes with foot treadle.
4. Move parking brake control to OFF.
5. Release service brakes.
6. Engage clutch in a smooth, steady manner, concurrently increasing engine RPM with foot throttle. RAPID ACCELERATION causes heavy exhaust smoke and high fuel consumption.
7. Accelerate to near governed rpm, then upshift. Operate in a gear range low enough to allow engine to accelerate under load. For best performance, do not skip gears.
8. Continue to upshift until cruising speed is reached. Under load, maintain engine rpm between 2400 and 3000 rpm.
9. On upgrade, downshift when engine starts to labor. Under load, do not allow engine rpm to drop below 2000.
10. On downgrade, select a gear which will retard vehicle speed while keeping engine rpm below 3000. A simple rule is to select the same gear which would be used to go up the grade.
11. Before stopping engine, operate at low idle for 30 seconds. DO NOT OPERATE AT LOW IDLE FOR MORE THAN A FEW MINUTES.
12. To stop the engine, turn ignition key to OFF.



1. Wiper control
2. Map light
3. Differential lockout switch
4. Air pressure or vacuum gauge
(do not operate w/low vacuum
light on)
5. Fuel gauge
6. Turn signal indicator lights
7. Headlight high-beam indicator
8. Speedometer (mph/km/h)
9. Ammeter
10. Oil pressure gauge
11. Tachometer
12. Heater air control
13. Throttle control
14. Heat control
15. Defroster control
16. Air vent control
17. Engine warning lights
18. Odometer (miles)
19. Temperature gauge
20. PTO shift
21. Vernier throttle control
22. Lighter
23. Light switch
24. Parking brake control (air)
25. Front Axle warning light
26. Ignition lock cylinder
27. Front axle range selector
28. Front axle control
29. Marker light switch
30. Low air warning light
31. Brake warning

VEHICLE LUBRICATION AND MAINTENANCE

Proper lubrication and maintenance is essential to reliable service and safe operation. Adherence to the following instructions and schedules will assure many hours of trouble-free service.

DAILY CHECKS

- Engine oil.
- Coolant in radiator.
- Fuel level.
- All lights.
- Tires and wheels.
- Horn and siren.
- Wiper, windshield, and washer fluid levels.
- Check for fuel, oil, and water leaks.
- Battery.

WEEKLY CHECKS

- Operation of radios.
- Moisture in air tanks.

EACH SIX-MONTH INTERVAL

- Change engine oil.*
- Service air cleaner.*
- Lubricate chassis.
- Check and adjust service brakes.
- Check oil levels in differentials, transfer, and transmission cases.
- Check drive belt tension.

*More frequent service is necessary when operating under heavy dust conditions.

EACH 12-MONTH INTERVAL

- Change engine oil and filter.
- Service air cleaner.
- Lubricate chassis.
- Repack wheel bearings.
- Inspect brake system and adjust brakes.
- Replace fuel filter.
- Check high and low idle.
- Inspect drive belts, replace as needed, and check tension.
- Inspect cooling system hoses, replace when there is evidence of cracking or weakening.
- Check operation of cooling system thermostat. Replace if faulty.
- Check all cab mounts.
- Check all electrical connections.
- Check charging system output.

Record all service and repair information in unit log book (Form 271) provided.

T E C H N I C A L DATA

P U M P M O D U L E

PUMP MAKE: HALE TYPE: SINGLE STAGE CENTRIFUGAL

RATED CAPACITY: 1000 GPM @ 150 PSI HALE MODEL: FB100-F460

PRIMER: HALE ELECTRIC SMV-12 PRESSURE GOVERNOR: HALE TYPE-ENGINE MASTER

SUCTION INLET: 5" NH DISCHARGE: (4) 2½" NH GATES (1) 4½" NH

ENGINE: FORD INDUSTRIAL MODEL: 460GF-2V

TYPE: V-8 GASOLINE, 4 STROKE BORE: 4.36 (109mm) STROKE: 3.85 (100mm)

DISPLACEMENT: 460 CID (7.5L) COMPRESSION RATIO: 8.0:1

CYLINDER NUMBERING AS VIEWED FROM FLYWHEEL END OF ENGINE:

LEFT BANK 5-6-7-8 FIRING ORDER 1-5-4-2-6-3-7-8

RIGHT BANK 1-2-3-4

OIL PRESSURE @ 2000 RPM: 35-75 PSI (2.4 - 5.2 bar)

OIL PRESSURE @ IDLE: 15 PSI MIN. (1.05 bar)

COOLING SYSTEM CAPACITY: 20 QUARTS APPROXIMATELY

CRANKCASE CAPACITY: 5 QTS. WITH FILTER S.A.E. 30 SD/SE

POINT GAP: .017 DWELL: 24-30° IDLE: 550-600 RPM

SPARK PLUGS: ARF 32 **GAP:** .035

FUEL SUPPLY IS FROM 30 GALLON PASSENGER SIDE TANK OPPOSITE PUMP OPERA-

PUMP OPERATION AND MAINTENANCE

All engine and pump controls and instruments are located on the operator's panel, driver's side of vehicle (illus. I-18).

The discharge manifold is aligned vertically on the forward side of the pump. The topmost discharge port is utilized to supply three pre-connected lines and the foam proportioner. See Foam System Operation section for live line operating procedures.

There are three 2½" NH male discharge ports for hose line connection. Each is equipped with locking quarter-turn ball valve. Auxiliary 2½" and tank section valves are located on the running board panel immediately below the pump. Water supply to the pump must be connected and open before starting the pump engine. Suction hose connections are made in the same manner as for any standard fire service pumper.

STARTING ENGINE

- Pull ignition switch to OUT position.
- Pull choke full OUT.
- Press start button IN and hold until engine starts.
- Push choke IN gradually to maintain smooth idle.

Should the engine not start within 20 seconds, release start button. After a brief pause, try again. Be alert for evidence of flooding.

STOPPING ENGINE

Restore throttle to idle position. Push ignition switch IN.

TO PRIME PUMP

- Secure water supply. If tank is the water source, OPEN the tank suction valve. If source is from a hydrant and 2½" suction port is used, be sure the suction port valve is OPEN.
- Open the governor-throttle valve until an RPM of 750-1000 is reached.
- Pull the PRIME handle out and hold until water discharges from primer pump to ground. Should prime not be secured within 20 seconds, release PRIME handle, check suction hose connection(s) and/or position of suction valves, and level of oil in PRIMER OIL RESERVOIR. Make necessary adjustments or correction. Try again.

OPERATING THE PUMP

- Open discharge port and associated nozzle.
- Open throttle until pressure gauge indicates 5-10 psi over that desired.
- Wait three seconds.
- Pull the Actuator full OUT.
- Close the throttle.

Governor is now operational. No further adjustment should be necessary unless a change in pressure is desired. To change pressure while pumping, open governor-throttle until it contacts acorn nut (center of control), push actuator in and reset as previously described.

It is recommended that pump be stored wet.

MAINTENANCE

The oil reservoir for the priming pump is located in the open compartment above the pump unit, passenger side of vehicle. Radiator access is located just forward of the oil reservoir, floor of compartment. Access to dipstick and engine oil filler is through a floor hatch in the center of the open compartment. It may be necessary to move equipment or materials carried in the open compartment to clear the access hatch.

Daily Checks:

- Oil level in crankcase; replenish with SAE 10-30 motor oil.
- Coolant level in radiator.
- Hoses and drive belts.
- Oil level in priming pump reservoir; replenish with SAE 30 motor oil.

Six Month/50 Hours Operation Interval:

- Change engine oil.
- Service air cleaner.
- Check PVC valve.
- Oil distributor cup with 3-5 drops of SAE 10-W oil (outside of distributor housing).

Twelve month/100 Hours Operation Interval:

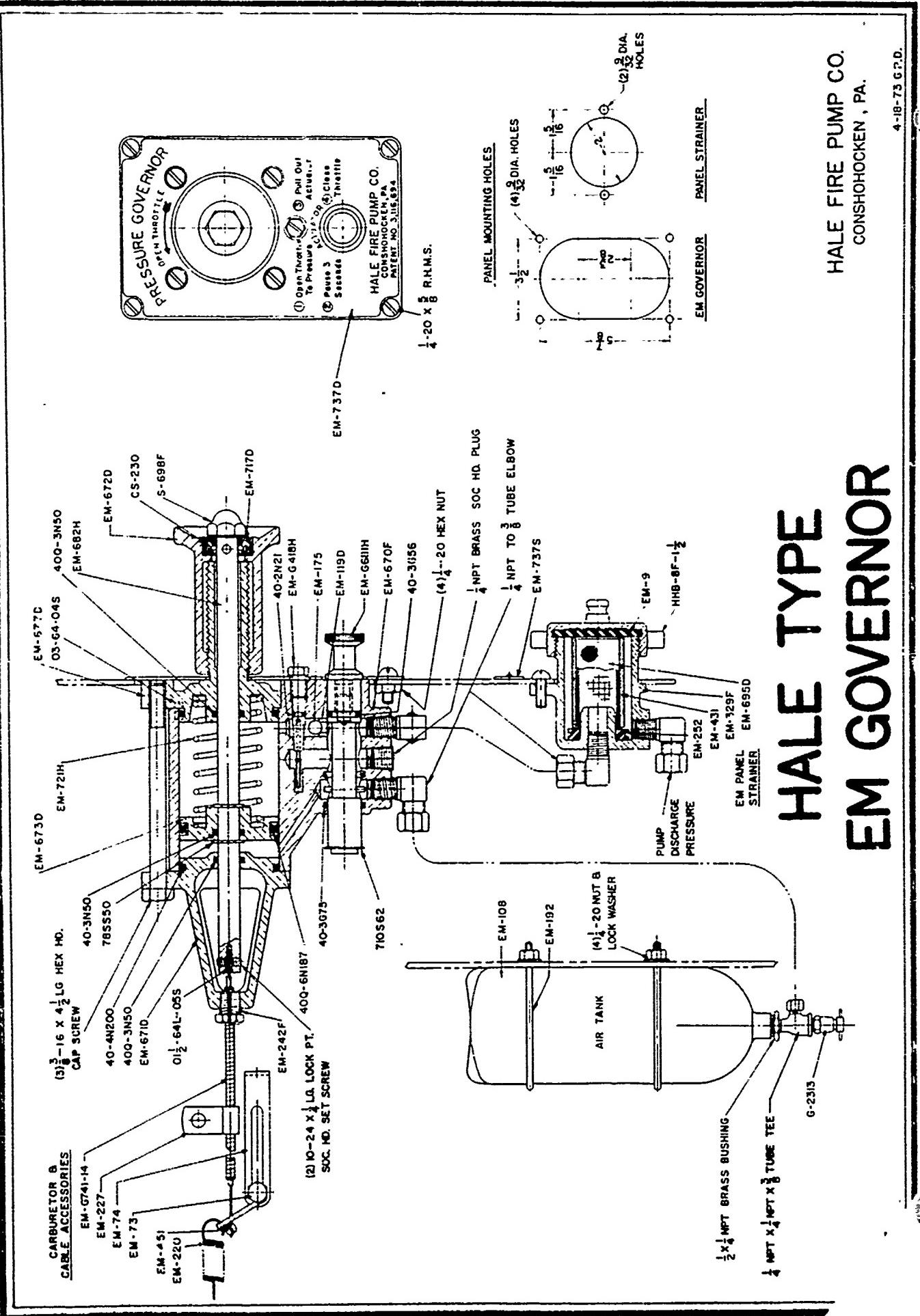
- Change engine oil and filter.
- Service air cleaner.
- Check PVC valve.
- Oil distributor cup.
- Check plugs and points; replace as necessary.
- Tune engine.

The electrical system is integrated with that of the vehicle. See vehicle operation section for maintenance procedures.

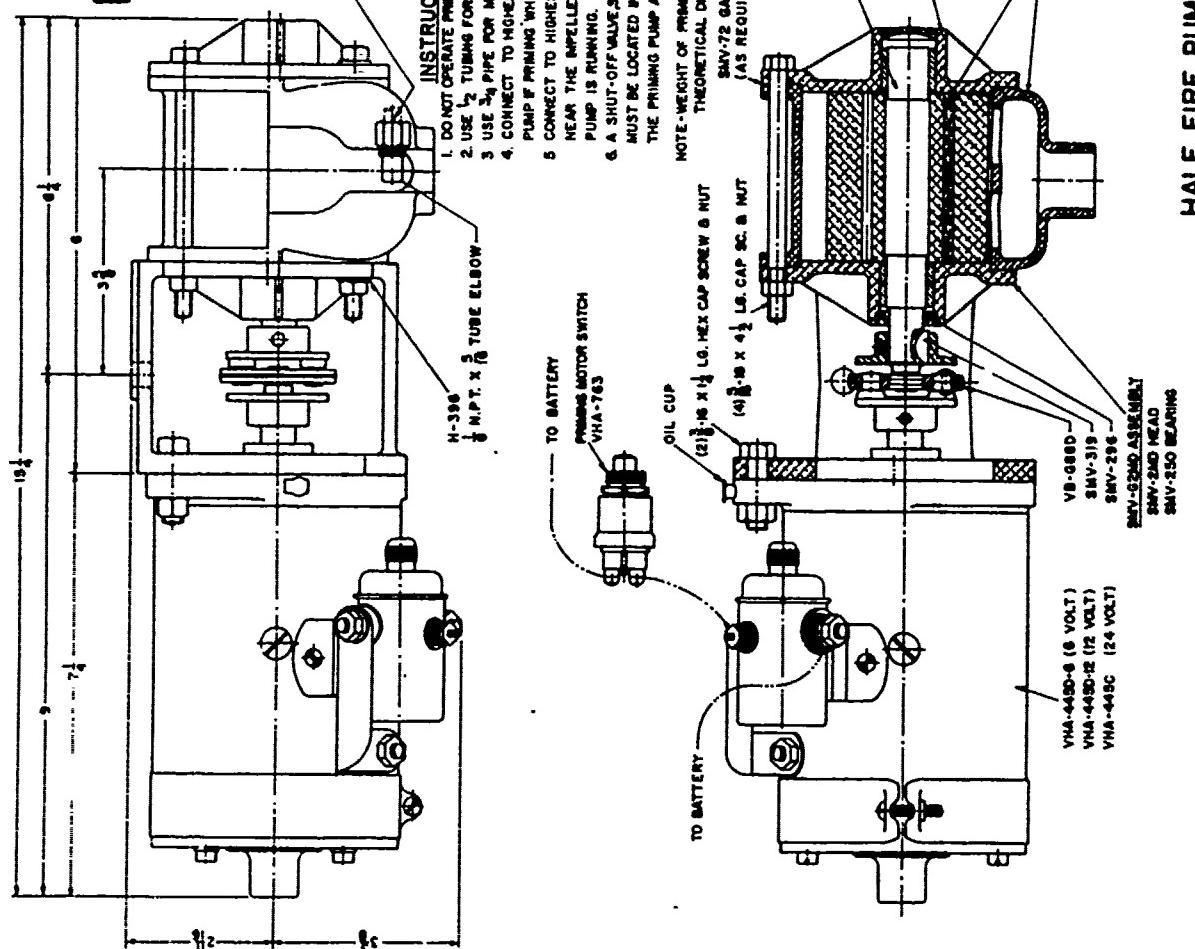
HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

4-18-73 G.P.D.

HALE TYPE EM GOVERNOR

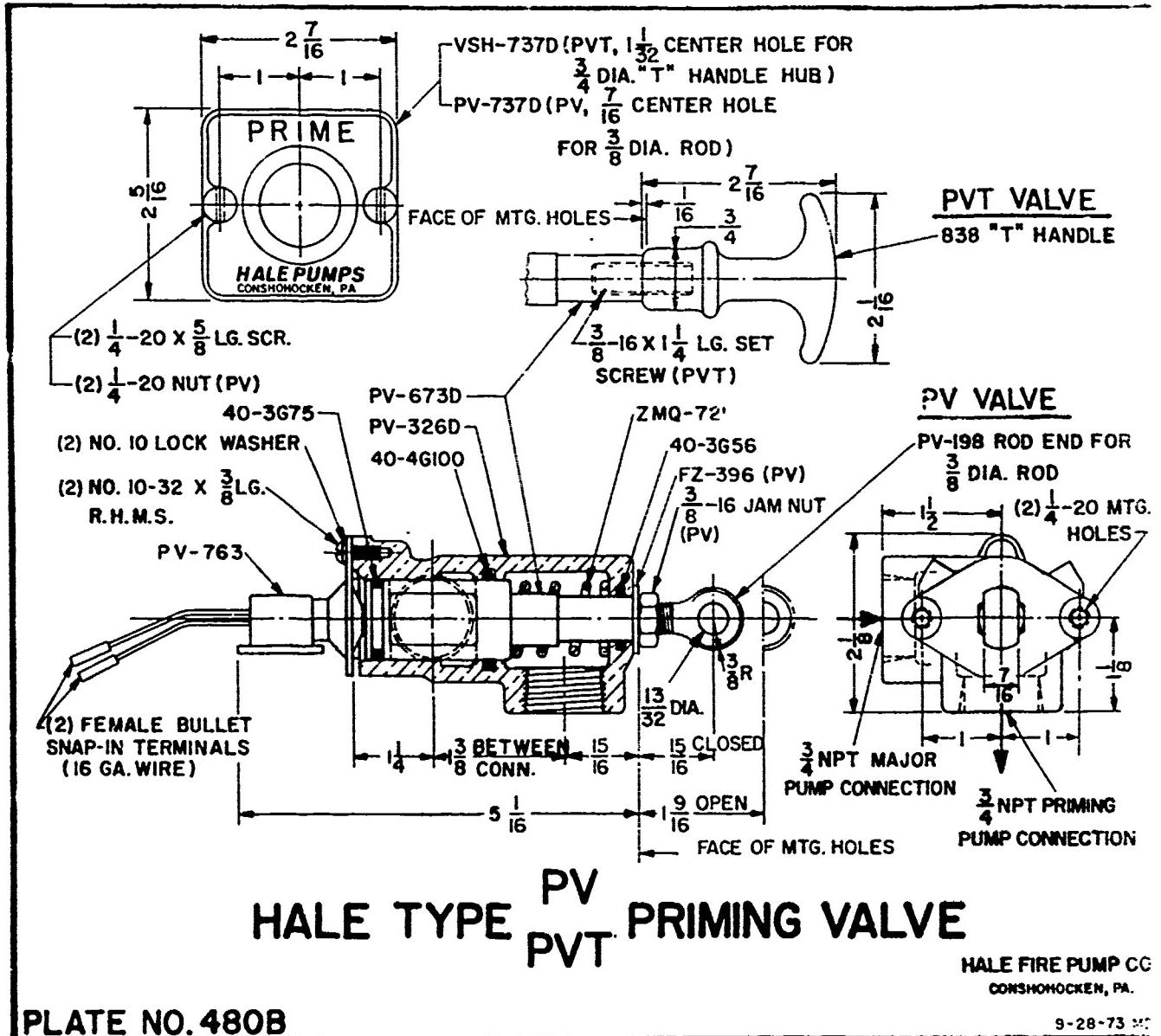


HALE TYPE **SMV-6** **PRIMING** **PUMP**
SMV-12 **SMV-24**

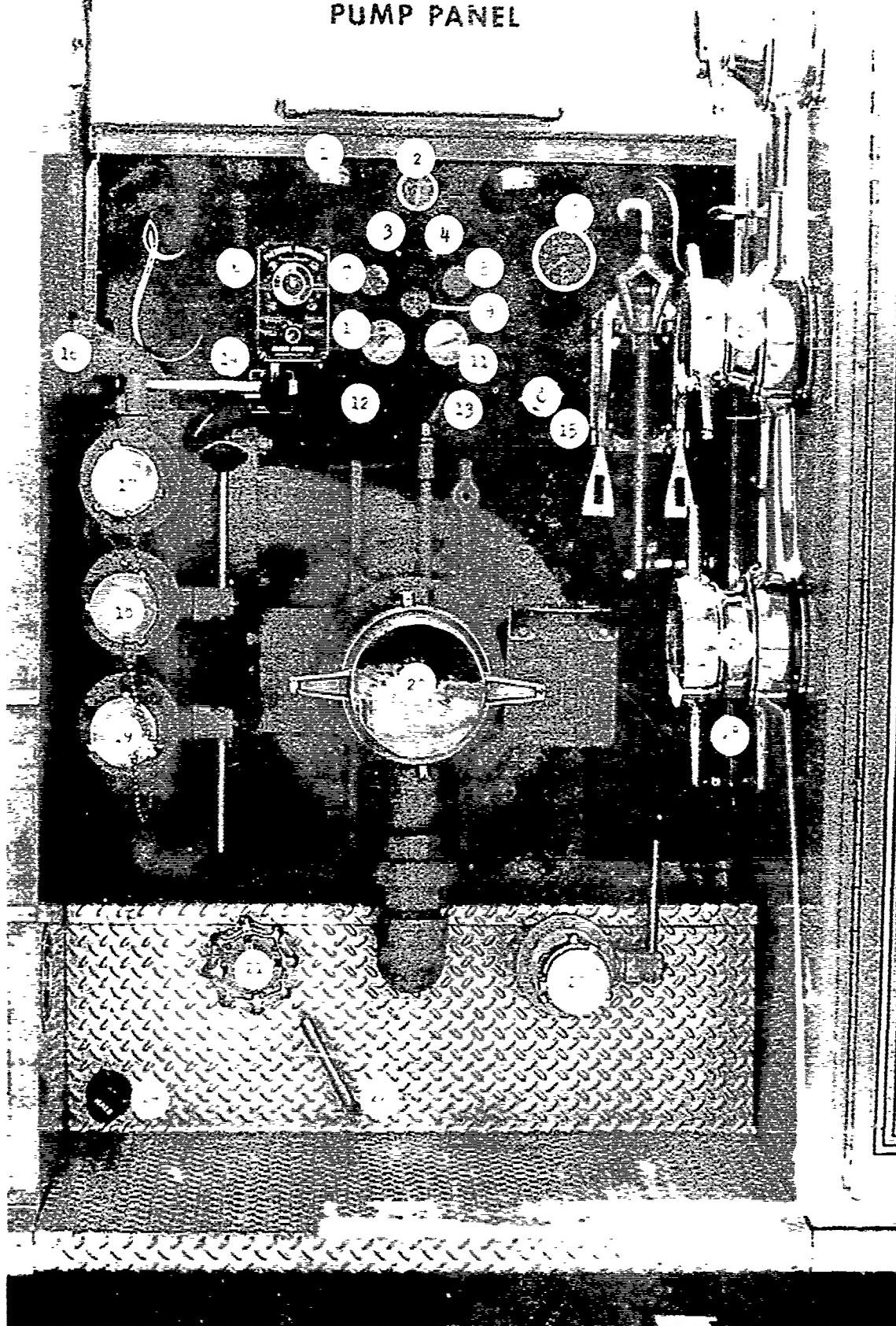


HALE FIRE PUMP CO.
CONSHOHOCKEN, PA.

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PUMP PANEL

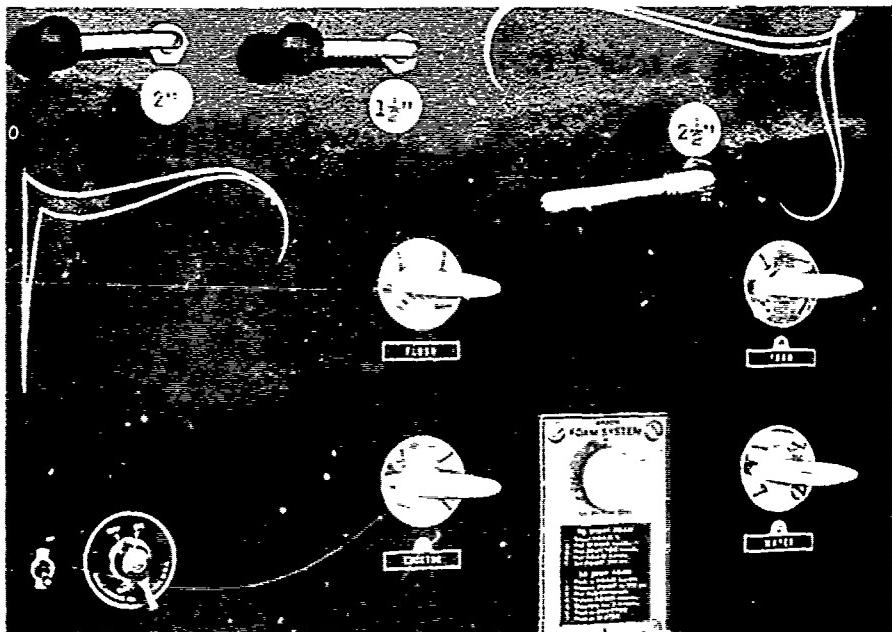


PUMP PANEL
INSTRUMENT IDENTIFICATION

1. Panel Lights
2. Fuel gauge
3. Ignition switch
4. Starter button
5. Tachometer
6. Governor
7. Heat gauge
8. Oil Pressure gauge
9. Ammeter
10. Compound gauge
11. Pressure gauge
12. Compound gauge bleed valve
13. Pressure gauge bleed valve
14. Primer valve
15. Test gauge outlet
16. Foam and Live Line valve
17. Outlet #2
18. Outlet #3
19. Outlet #4
20. 5" Suction Port
21. Tank fill valve
22. Tank suction valve
23. 2½" Suction valve
24. Pump drain valve
25. 5" x 4½" adapter
26. 5" x 4" adapter
27. 5" x 2½" adapter
28. Sight gauge, tank

FOAM SYSTEM OPERATION

An Akron, Style 2959 pump foam system is installed in the front module of the apparatus. Control panel is located on driver's side of vehicle, immediately forward of the pump module. The system is plumbed to supply foam through either the $1\frac{1}{2}$ " or 2" pre-connected line. The $2\frac{1}{2}$ " pre-connected line is independent of the foam system. To operate either the $1\frac{1}{2}$ " or 2" pre-connected line it is necessary to open (pull) the water valve (2).



TO START FOAM

1. Start pump engine and prime the pump.
2. Set FOAM proportioning valve selector to percentage recommended by manufacturer of concentrate being used for particular application.
3. Pull WATER handle.
4. Pull EDUCTOR handle.
5. Pull FOAM handle.
6. Set PUMP pressure at 200 psi.
7. Pull selected pre-connected hose line and open corresponding control valve.

TO STOP FOAM

1. Push in FOAM handle.
2. Reduce PUMP pressure to 100 psi.
3. Pull FLUSH handle.
4. Rotate FOAM proportioner valve selector.
5. Operate for three minutes with hose line charged and nozzle open.
6. Push in EDUCTOR handle.
7. Push in WATER handle.

FOAM TANK

A 50-gallon (189 litre) tank is mounted at the top of the forward compartment of the rear module. Tank filler opening is located in the gantry boom well, topside and toward driver's side of vehicle. Use a funnel for filling operation. Any foam concentrate rated in the one-to-six percent proportion range may be used.

T E C H N I C A L D A T A

F R O N T W I N C H

MAKE: RAMSEY MODEL: DC-246R (2 SPEED)

POWER: ELECTRIC, 12 VOLT DC CONTROL: DETACHABLE 3-POSITION
MICRO-SWITCH

CABLE: SIZE - 5/16 IN. (7.937 MM) LENGTH: 150 FT. (46M)

RATED CAPACITIES:

	<u>LINE PULL</u>	<u>LINE SPEED*</u>
1ST LAYER	8,000 LBS (3,628 KGS)	16 FPM (4.8 MPM)
2ND LAYER	6,900 LBS (3,129 KGS)	19 FPM (5.8 MPM)
3RD LAYER	6,100 LBS (2,766 KGS)	22 FPM (6.7 MPM)
4TH LAYER	5,400 LBS (2,449 KGS)	24 FPM (7.3 MPM)
5TH LAYER	4,900 LBS (2,222 KGS)	27 FPM (8.2 MPM)
6TH LAYER	4,500 LBS (2,041 KGS)	29 FPM (8.8 MPM)

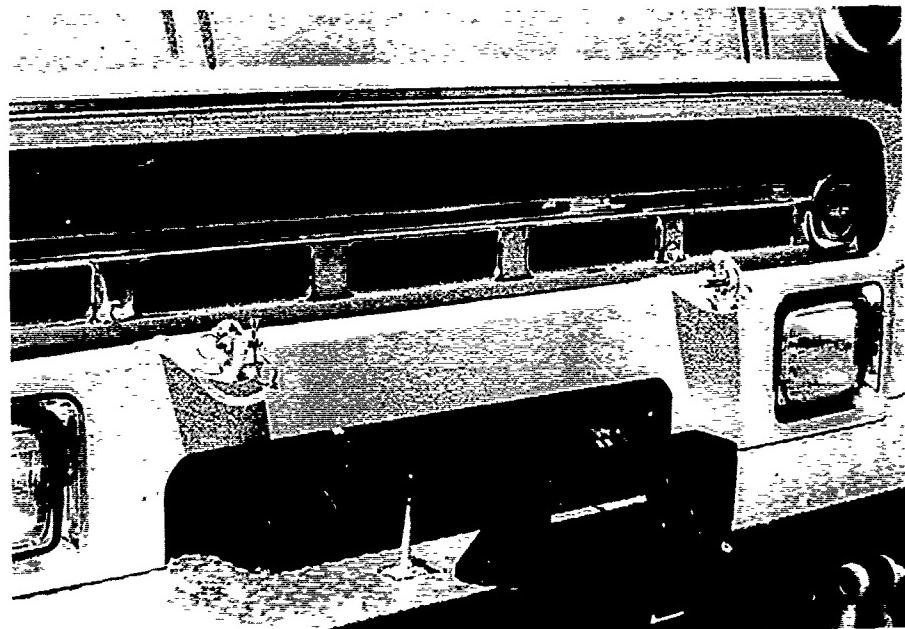
*HIGH RANGE (SPEED RANGE DOES NOT ALTER LINE PULL RATING)

Speed range of drum rotation is determined by the position of the selector lever -- IN for high, and OUT for low. Direction of drum rotation is determined by the position of the micro-switch on the detachable remote control head -- UP for cable-out and DOWN for cable-in rotation.

Geared or free spool stage of drum drive is determined by position of the "T" handle mounted at the end of winch opposite that of the Range Selector. When "T" handle is IN, winch is in gear; OUT disengages drive gear for free spool operation.

OPERATING PROCEDURES

ELECTRIC WINCH



1. Position vehicle upon firm surface with winch drum at right angle and centered to the line of pull.
2. Set vehicle parking brakes.
3. Place wheel chock in front of each outside rear wheel.
4. Grasp cable eye firmly and pull cable from drum in cadence with powered drum rotation or in a smooth and steady manner in the free spool mode. DON'T JERK CABLE. DON'T ALLOW DRUM SPEED GREATER THAN RATE OF CABLE TRAVEL.
5. Activate winch through the micro-switch of the controller for powered cable-out operation.
6. Attach cable eye to rigging with a shackle. Secure shackle pin with nut and/or cotter key.
7. Check security of load rigging and cable attachment.
8. Clear personnel away from cable and line of pull a distance equal to at least one-half the length of cable run.
9. Remove any obstructions to either cable or load.

10. Start cable-in operation. Keep close watch upon cable and load movement. Stop immediately when there is any evidence of load binding, obstruction to free movement or shift in rigging.
11. Whenever possible, secure load against movement opposite direction of pull when winching is momentarily halted.

T E C H N I C A L D A T A
R E A R W I N C H

MAKE: BRADEN MODEL: AMU7-16-F

POWER: HYDRAULIC 2-SPEED PTO DRIVEN CONTROL: HYDRAULIC VALVES

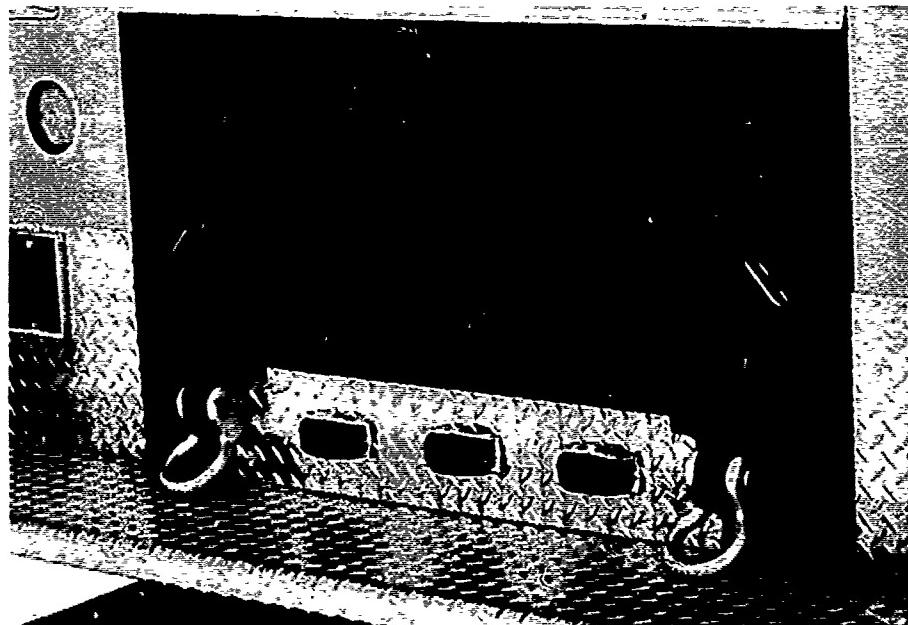
CABLE: SIZE - 1/2 IN. (12.7 MM) LENGTH - 200 FT (60M)

RATED CAPACITIES:

	<u>LINE PULL</u>	<u>LINE SPEED</u>
1ST LAYER	20,000 LBS (9,000 KGS)	20 FPM (6.1 MPM)
2ND LAYER	16,400 LBS (7,490 KGS)	24 FPM (7.3 MPM)
3RD LAYER	13,900 lbs 96,250 KGS)	28 FPM (8.5 MPM)
4TH LAYER	12,000 LBS (5,500 KGS)	33 FPM (10 MPM)
5TH LAYER	10,600 LBS (4,800 KGS)	37 FPM (11.4 MPM)

Hydraulic controls are located in the lower rear compartment, passenger side of vehicle.

PTO controls are located in the cab, attached to lower dash panel immediately left of steering column.



T E C H N I C A L D A T A
REAR WINCH - HYDRAULIC SYSTEM

MOTOR: CHAR-LYNN #104-1004 -- PTO DRIVEN

PUMP: DENNISON #T5CC-014-008-1-R -- TWO STAGE

RELIEF VALVES: DENNISON #R4V-03-515 10 -- A5

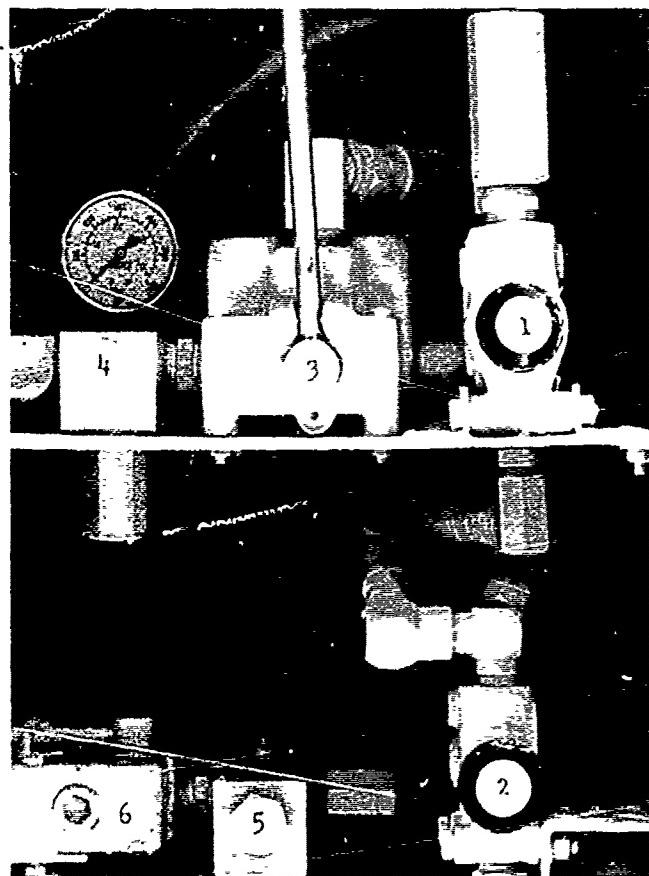
DIRECTIONAL CONTROL VALVE: BRAND #DC75-0-4-L-D

SHUTTLE VALVES: BRAND #MS75 CHECK VALVE: REXKOTH #S15-A, 3.0/15

FILTER & INDICATOR: SCHROEDER #LF1-1K10-P-D

SUCTION & STRAINER: SCHROEDER #SKB 1-1/2

RESERVOIR: HYDRAULIC CONTROLS 1228 - RR50 CAPACITY: 50 GALLONS



of the winch drum. When cable feed is towards top of drum, the control lever is pushed IN for cable-in, and pulled OUT for cable-out operation. Should, for any reason, cable feed be reversed, operation of the Directional Control Valve is also reversed. Operator should check cable loading before moving the Directional Control Valve lever.

Winch speed is determined by the position of Shuttle Valve (1) IN or high, OUT for low. In the high speed position, fluid from both stages of the pump (26 GPM) is diverted to power the winch. In the low speed position, fluid from pump 2nd stage (11GPM) is diverted through Shuttle Valve (2).

Shuttle Valve (2) is the control valve for the hydraulic tool circuit. When valve position is IN, fluid recirculates to the reservoir. In the OUT position, fluid is diverted through the hydraulic tool connection block. Both shuttle valves must be in the OUT position if the hydraulic tool circuit is to be utilized.

The relief valves (4 & 5) are pre-set at proper operating maximums. Do not attempt to change the setting. Position of the DIRECTIONAL CONTROL Valve (3) determines rotational direction

OPERATING PROCEDURES

HYDRAULIC WINCH

1. Position vehicle upon firm surface with winch drum at right angle and centered to the line of pull.
2. Set vehicle parking brakes.
3. Place wheel chock behind each outside rear wheel.
4. Attach pads to each of the stabilizers.
5. Lower stabilizers:
 - a. Support stabilizer with outboard hand.
 - b. Remove retainer pin with free hand.
 - c. Lower stabilizer to stop.
 - d. Screw pad downward until firmly in contact with supporting surface. (Cribbing can be used under pad if pad will not make firm contact.)
6. For free spool cable-out operation, shift winch drive gear to neutral:
 - a. Lift operating knob until pin is clear of positioning hole.
 - b. Move control arm outward until pin is aligned with outboard positioning hole.
 - c. Lower operating knob until pin is fully seated in positioning hole.For powered cable-out operation, the winch is left in gear. Proceed with step 9 before cable-out operation.
7. Grasp cable eye firmly and pull cable directly along intended line of pull. DO NOT JERK. Adjust speed of pull-out to avoid excessive slack in cable and spool over-run. If under power, do not allow a winch speed greater than rate of cable travel. Cable winding must be kept tight during cable-out operation.
8. Attach cable eye to rigging with a shackle. Secure shackle pin with nut and/or cotter key.
9. Engage PTO:
 - a. Disengage clutch; wait for transmission to stop rotating.

- b. Shift transmission into drive position.
- c. Shift PTO into gear by pulling control knob full-out.
- d. Shift transmission into neutral.
- e. Engage clutch.
- f. Set engine speed at 1800 RPM with Vernier throttle control.

10. Operating the winch:

- a. Set shuttle valve for desired winch speed; IN for high, OUT for low.
- b. For cable-out operation, pull directional control lever outward. Do not operate until crew member has placed tension upon and is ready to pull cable.
- c. For cable-in operation (engage winch drive gear if cable-out was free spool), push directional control lever inward. Before operating, be sure to:
 - (1) Check cable fastening to load rigging.
 - (2) Clear all personnel away from cable and line of pull a distance at least equal to 1/2 the length of cable run.
 - (3) Clear all obstructions to cable and load.
- d. Keep close watch upon cable and load movement. Stop immediately when there is any evidence of load binding, obstruction to free movement, or shift in rigging.
- e. Whenever possible, secure load against movement opposite direction of pull when winching is momentarily halted.

F R O N T B O O M A S S E M B L Y

The front boom assembly is intended only for light duty vertical lifting and lowering operations. Safe working load is five hundred pounds (210 Kg). When used for rescue purposes, the winch cable-boom assembly system must be backed up with a manual rescue rope system.

Two persons are needed for setting up the boom assembly. Components are shown in (A) . As pictured, components are arranged in proper order for expedient set-up.

Sequential set-up operations are:

- Attach roof ladder to mounting bracket (B-1) with ladder pin. Secure ladder pin with safety ring-lock pin.
- Attach braces to mounting brackets (B-2) and pin with safety ring-lock pins provided.
- Place pulley-block assembly (C) over "marked" area of ladder, align pin hole with opening in rung end, install ladder pin and secure with safety ring-lock pin.
- Raise ladder to height where pulley block assembly is on a horizontal plane with brace mounting brackets.
- Raise brace, driver's side, align with pulley-block assembly attachment (D), install and secure with safety ring-lock pin.
- Raise and attach the second brace.

No lateral stress should be placed upon the boom assembly. Use guide ropes on load to be hoisted for maintaining perpendicular stability of haul line.



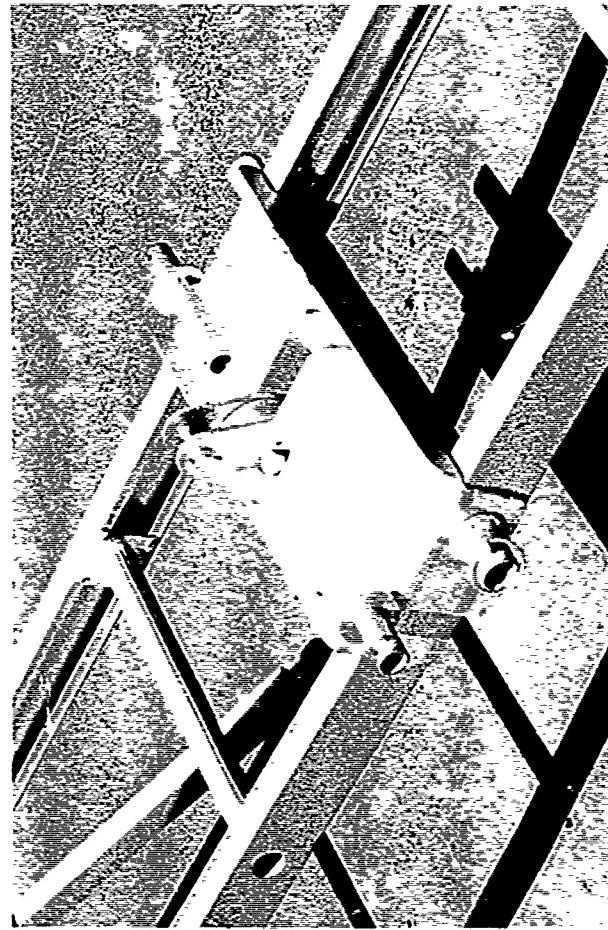
(B)



(D)



(A)



(C)

R E A R B O O M A S S E M B L Y

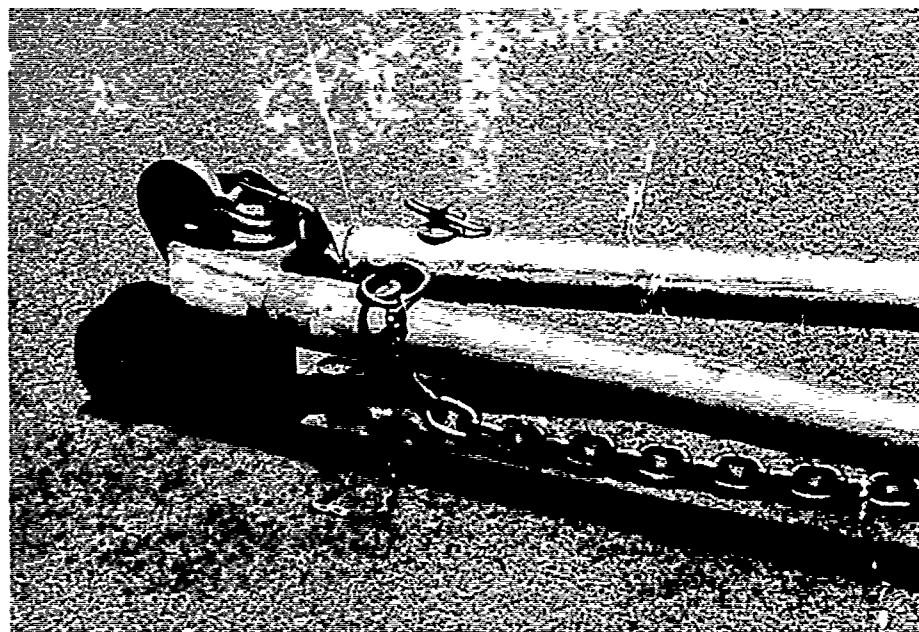
The rear boom assembly is intended for heavy duty vertical lifting and lowering operations. Safe working load is eight thousand pounds (3,600 kg). When used for rescue purposes, the winch cable-boom assembly system must be backed up with a manual rescue rope system.

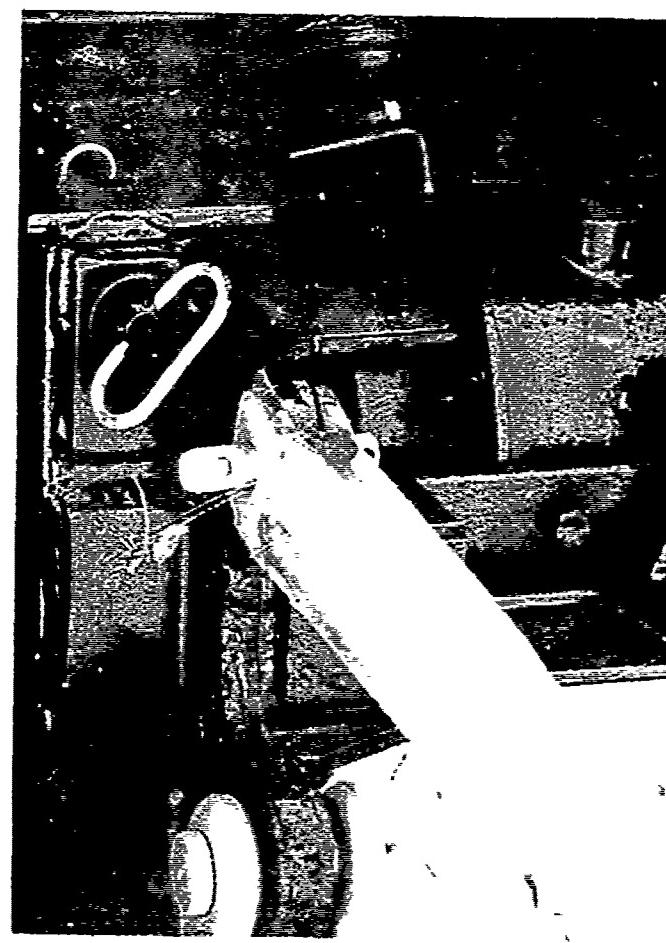
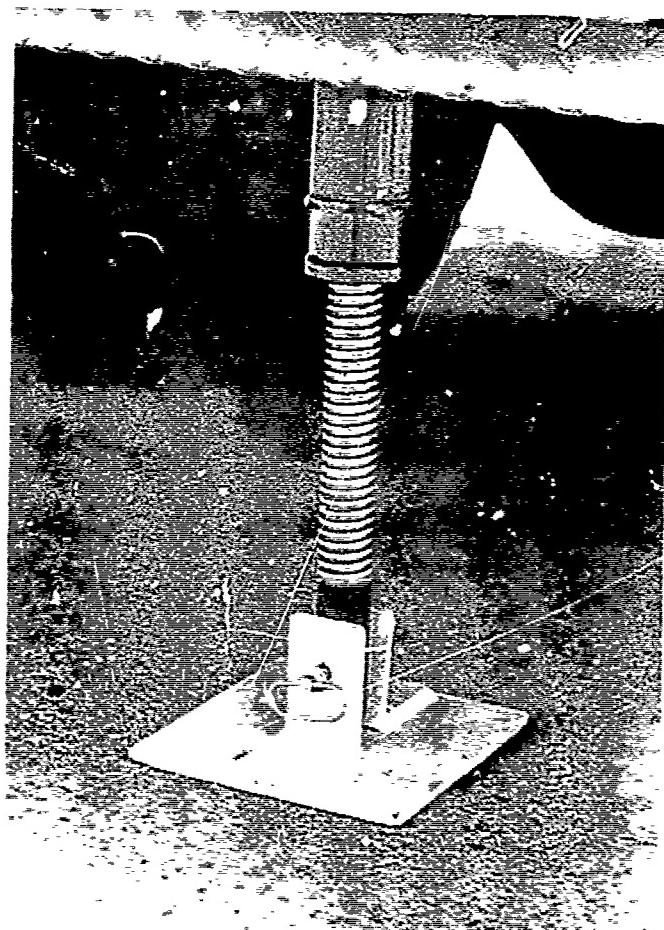
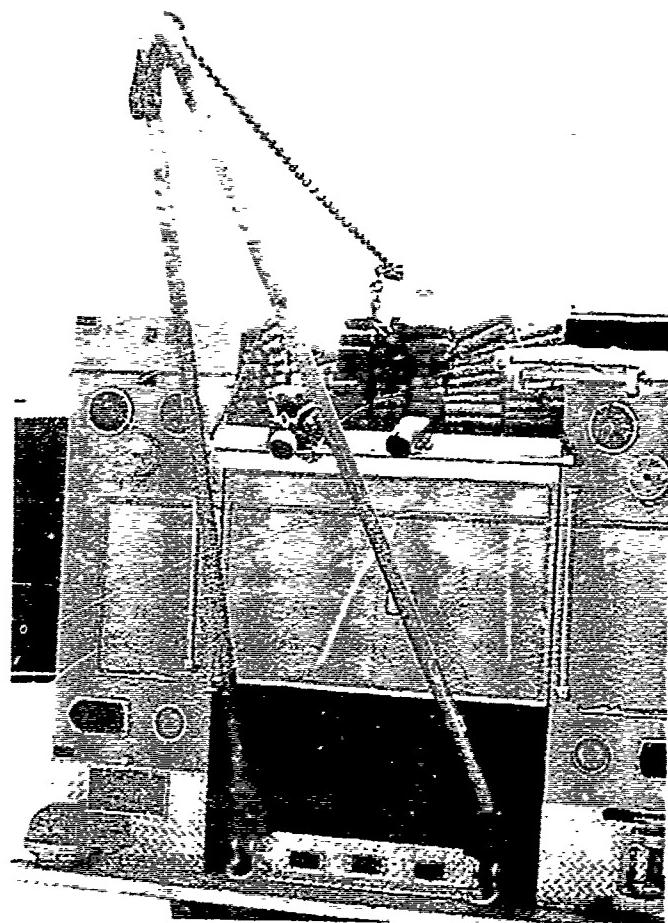
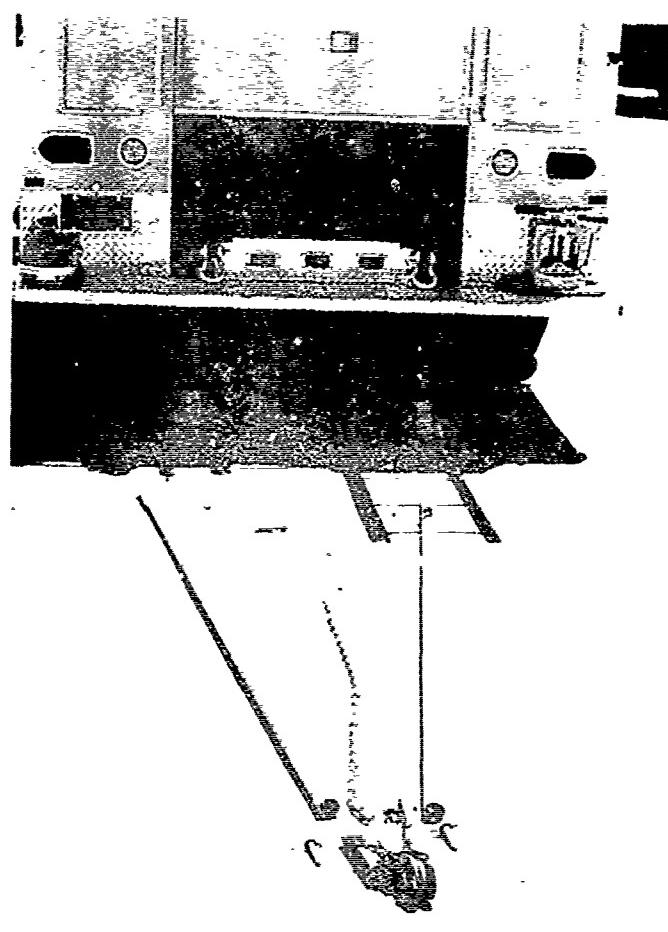
Three persons are needed to facilitate boom set-up. Components are shown in figure I-32. As pictured, components are arranged in proper order for expedient set-up.

Sequential set-up operations are:

- Attach pads to, and lower stabilizer jacks. Be sure pads rest firmly upon supporting surface.
- Pull gantry extension boom until pin holes align with most rearward set of holes in the main gantry boom. Secure with pins and insert cotter key retainers to secure pins.
- Attach pin holes (arrow up) to their respective mounting plates with safety snap-pins provided. Poles are marked "D" for driver's side and "P" for passenger side.
- Install pulley block assembly on outer ends of gin poles with pins provided. Secure pins with cotter key attached to each.
- Lift gin poles while concurrently pulling with chain pull-rope until pulley block assembly is at desired working height. Anchor chain in hook on gantry extension boom. Mouse hook to secure chain link.

The gantry boom-gin pole assembly is not designed for lateral stress. Use guide ropes on load to be hoisted to maintain perpendicular stability.





L A D D E R C O M P A R T M E N T E L E V A T I O N

A hydraulic ram is fitted to the forward bottom of the compartment. The ram is powered by an electric motor-driven hydraulic pump. Elevating the forward end of the compartment, place it at an angle which facilitates loading and removal of ladders, gin poles and braces. Controls consist of a push-pull directional control and a self-cancelling button switch located on rear body panel, passenger side. To elevate compartment:

- Make sure there is no obstruction to upward travel of compartment and no object(s) are on top of it.
- Pull operating control out.
- Press button and hold in until upward travel stops, then release immediately. Elevation will hold until control is pushed IN.

F L O O D L I G H T S Y S T E M

The pre-wired, four-unit, 110-volt flood light system is provided for illuminating outdoor work area. Breaker panel and control switches are located on the rear bulkhead in the forward compartment of the rear module, passenger side. The upper switch controls lights on passenger side. The lower switch controls lights on driver's side.

Electrical power may be supplied from either household current or portable generator. The supply cord is located below the breaker panel box. A three-wire extension cord, 16/3 or larger, may be utilized for light system supply.

The lights mounted atop and either side of the front module are adjustable only in relation to the vertical axis of the lens housing. To change the vertical angle:

1. Loosen the nut securing the lock joint on supporting stanchion.
2. Adjust lens housing to desired angle.
3. Retighten the securing nut.

Two lights, mounting stanchions, and weatherproof electrical outlets are located in the gantry boom well. To set up for operation:

1. Insert light standard into support stanchion.
2. Lower to desired elevation with lens toward area to be lighted.
3. Tighten set-screw of stanchion.
4. Plug supply cord into outlet box on forward bulkhead.
5. Make vertical angle adjustment as for fixed lights above.

Light housings become very hot after a few minutes operation. Wear suitable hand protection if adjustment is necessary during operation. Allow a few minutes cool-down period before disassembly.

O E S R A D I O S Y S T E M

TRANSMITTER:

Channel No. 1 33.98 MHz OES Channel 1 (repeater only - duplex)
Channel No. 2 33.66 MHz OES Channel 2 (repeater only - duplex)
Channel No. 3 154.160 MHz OES Channel 1 (car-to-car - simplex)
Channel No. 4 154.220 MHz OES Channel 2 (car-to-car - simplex)
Channel No. 6 154.280 MHz White Fire Channel 1 (car-to-car - simplex)
Channel No. 7 154.295 MHz White Fire Channel 3 (car-to-car - simplex)
Channel No. 8 Not crystalled, may be used by assignee if approved by OES Fire Division, with conditions.

RECEIVER:

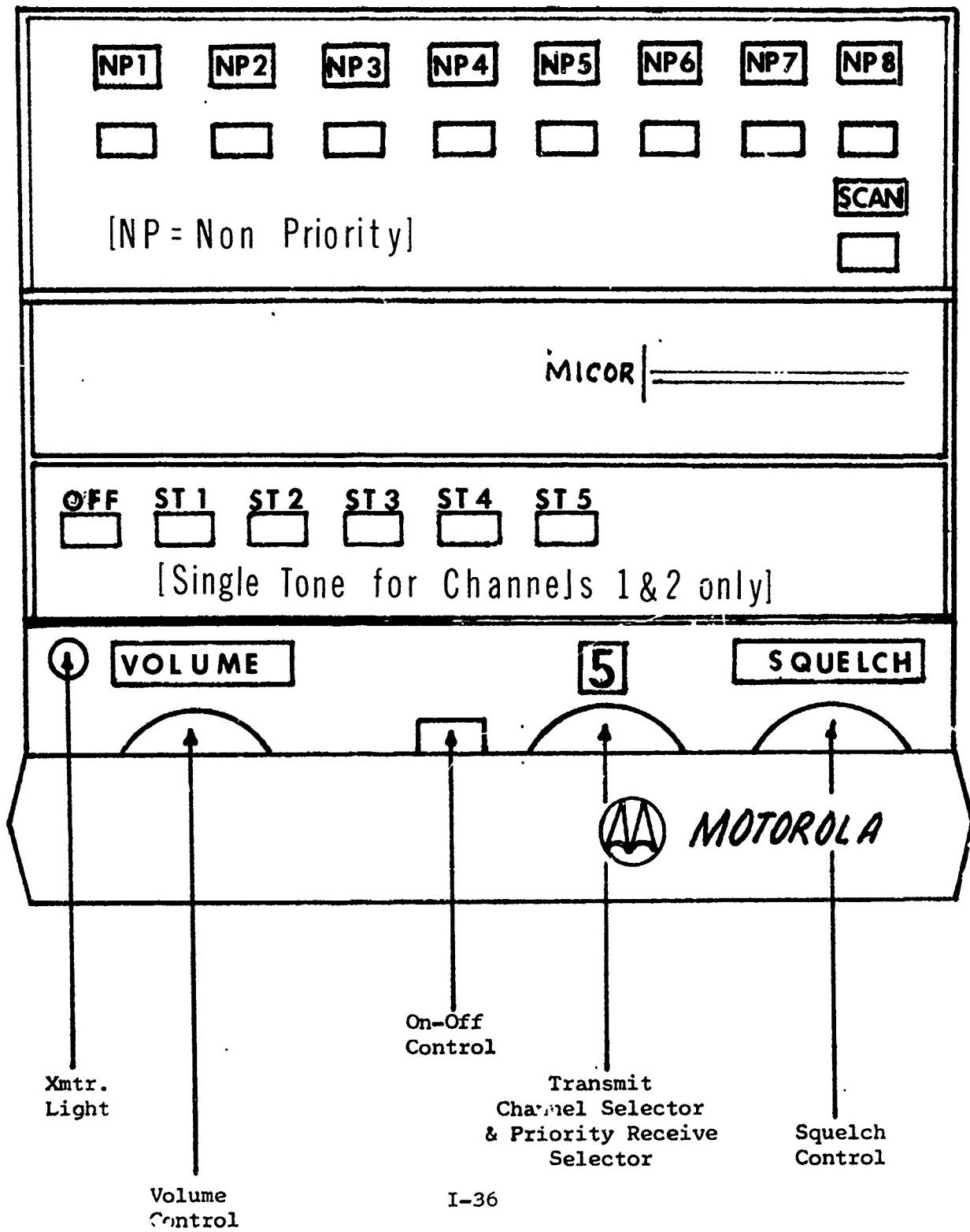
Channel No. 1 154.160 MHz OES Channel 1
Channel No. 2 154.220 MHz OES Channel 2
Channel No. 3 154.160 MHz OES Channel 1
Channel No. 4 154.220 MHz OES Channel 2
Channel No. 5 154.265 MHz White Fire Channel 2
Channel No. 6 154.280 MHz White Fire Channel 1
Channel No. 7 154.295 MHz White Fire Channel 3
Channel No. 8 Open

When operating on Channel 1 or Channel 2, the proper single tone (ST) must be selected (see repeater map). When transmitting on Channels 3, 4, 5, 6, 7, and 8, depress the orange "off" button next to the single tone controls. The number that appears in the window above the Transmit Channel Selector Dial will determine the priority receive channel; i.e., if the number in window is 5, Channel 5 (White Fire 2) will have the priority receive when other frequencies are transmitting at the same time.

To use the scan feature, depress the orange scan button. Also depress the button below the NP* light of the channels you wish to scan. When the button below the NP light is out, you will not receive that particular channel. When the orange scan button is out, you will receive only the channel that appears on the transmit selector dial.

*"NP" - Non Priority

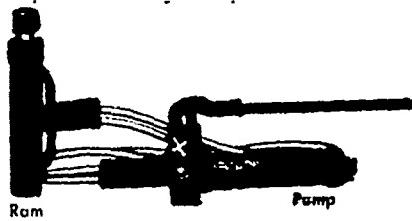
RADIO CONTROL HEADS - H.R.F.-1



S E C T I O N I I

DESCRIPTION AND OPERATION OF PORTABLE EQUIPMENT

MANUALLY-OPERATED HYDRAULIC RESCUE KIT



A 10-ton capacity, Hein-Werner "Pushmaster" Kit is located in the over-the-wheel compartment, passenger side of vehicle.

Power is generated by a manually-operated hydraulic pump. Application of force is through a hydraulic ram. Pump and ram are inter-connected with dual hydraulic hoses.

The pump and ram will operate in any position from horizontal to vertical. Ram travel is six inches and positive for either extension or retraction. Directional travel of ram is determined by position of release valve.

TO EXTEND, turn valve fully to the right.

TO RETRACT, turn valve fully to the left.

Pushing or lifting operation can be performed by attaching appropriate head and toe device to each end of ram. All attachments utilize standard 1½" pipe thread. Extension tubes are provided for attachment between ram and head or toe devices to achieve total tool length as near to width of opening as is possible before power extension is started.

Pulling can be achieved by either extending ram and attaching one end to firm anchor and other end to object to be moved and retracting ram; OR by extending ram with base on firm surface and chains attached to object to be moved and extension end of ram.

Utilize cribbing to block objects moved and to permit re-set of tool for further movement. Stabilize loads by utilizing rope or cable tie-offs, cribbing and/or wedges.

USE OF ATTACHMENTS

- SPREADER Attaches easily to body of ram with ram collar for use in small confined areas for spreading or lifting.
- SPEED COUPLER Eliminates the need for frequently breaking down a setup to add lengths of pipe. Provides exact length required and the advantage of the full hydraulic travel of the ram.
- ADJUSTABLE SPOON Attaches to ram for use in pushing or pulling applications.
- 6' CHAIN W/HOOK Used with chain attachments for fast pulling hookup.
- CHAIN ATTACH Screws on ram cylinder for use with chain for all pulling operations.
- CONCAVE 90° HEAD Used on either end of ram to grip in wood, dirt, or edges of metal where flat surfaces can't be used.
- V HEAD Use on either end of ram for sure holding in corners or angles where flat head won't fit.
- "C" CLAMP Attaches to ram body for use in clamping and punching operations.
- RAM TOE Screws on head of ram for use with Body Toe for lifting and spreading operations.
- PULL TOE CLAMP Used on either end of ram for pulling operations.
- BODY TOE Screws on ram body for use with Ram Toe for lifting and spreading operations.
- COUPLING Used in attaching lengths of extension tubing.
- FLAT HEAD Used on either end of ram when a flat, secure surface is needed for pushing.
- MALE CONNECTOR Screws into ram base for using threaded attachments.
- RAM CAP Screws on threaded head for use in general spreading and lifting.
- OFFSET HEAD Attaches to ram body for use in pulling and clamping operations.
- SPREADER HEAD Used on either end of ram for solid support in corners or small openings.

A I R H A M M E R R E S C U E K I T

A Superior 301 Air Hammer Rescue Kit is carried in the lower section of the passenger side center compartment of rear module. The air hammer is equipped with an OSHA-approved quick-coupler.

Air supply can be taken from any of the spare air bottles carried on the apparatus or from the front tank of vehicle air brake system.

KIT CONTENTS

One Superior Air Hammer
Two Long flat chisels
Two Short flat chisels
Two Panel cutters
25' Air hose
One Regulator
One Coiled air hose w/quick-coupler at each end.

AIR BOTTLE HOOK UP

1. Attach regulator to fresh air tank.
2. Attach air hose to quick coupler on the regulator.
3. Connect air hose quick coupler to air hammer.

VEHICLE AIR TANK HOOK UP

1. Open blow-off valve on air tank and allow all moisture to be excluded.
2. Close blow-off valve when there is no evidence of moisture in air stream.
3. Using the coiled "blue" air hose, stored on top of kit box, attach one quick-coupler to airflate adapter on tank. Attach quick adapter on the other end to air hammer supply hose.
4. Connect air hose quick-coupler to air hammer.

CHISEL ATTACHMENT

1. Pull and hold back the tool chuck retainer.
2. Slip chisel shank into tool chuck.
3. Release the retainer.

CHISEL SELECTION

Long, flat chisel for general cutting.
Short, flat chisel for tight spots.
Panel chisel for fast cutting of sheet metal panels.

HYDRAULIC-POWERED RESCUE TOOL

A Hurst Rescue Tool "JAWS OF LIFE" with auxiliary attachments is located in the lower rear passenger side compartment of the rear module. As carried, the automotive jaws are attached to tool arms. The power unit must be removed from compartment for operation. Manufacturer's Operations and Maintenance Instructions are enclosed in a plastic pouch and stored in the upper rear section of the compartment.

Operators should have completed the manufacturer's recommended course of instruction before attempting to operate either the rescue tool or shears.

PREPARATION FOR USE

1. Remove power unit, tool, and selected attachments from compartment. Move components near to point of use.
2. Select and install attachments to suit particular need; i.e., cutting, spreading, prying or pulling.
3. Attach hoses to tool or shears according to priority of use.
4. Fill fuel tank of power unit with prepared fuel-oil mixture.
5. Check level of fluid in hydraulic fluid reservoir. Replenish until within one inch of the top of the reservoir.

TO START POWER UNIT

1. All hoses must be connected before starting engine. Hoses must not be disconnected while engine is operating.
2. Move choke lever to "CLOSED" position.
3. Secure operating lever for governor control in the "RUN" position.
4. Pull starting rope several times to prime carburetor (until engine pops).
5. Return choke to "OPEN" position.
6. Place foot on lower portion of longitudinal frame.
7. Hold top portion of longitudinal frame with hand.
8. Pull starting rope sharply.

Engine should start promptly. If it fails to start after several pulls, repeat starting procedure.

OPERATING RESCUE TOOL OR SERIES 150 SHEARS

1. Operate thumb controls several cycles until arms/blades operate smoothly through full range of movement.
2. Move thumb control in direction away from cylinder body to open.
3. Move thumb control toward cylinder body to close.

INSTALLING ATTACHMENTS ON TOOL ARMS

Changing Jaws:

1. Remove jaw retainer pins.
2. Depress and hold retainer spring.
3. Slide jaw onto or off arm.
4. Release retainer spring. On installation, be sure retainer spring pin is seated in the small hole near the bottom of long side of the jaw.
5. Install jaw retainer pin.

Attach Chain Shackles:

1. Force short jaw retainer pins out.
2. Slip chain shackle over the jaw and arm.
3. Insert long fastpin and press locking ring against shackle housing.
4. Be sure hooks are each facing the same direction, either up or down.
5. Attach chains from same direction (side).

NOTE: Steps 4 and 5 are essential to prevent arms from twisting.

Attaching Din Shears:

1. Close arms of tool.
2. Remove jaws.
3. Position DIN shears with pins facing up.
4. Slip pins of DIN shears into holes in arms.
5. Install safety caps on pins.

Removing Din Shears:

1. Close arms of tool.
2. Turn power unit off.
3. Operate triggers to release pressure.
4. Remove safety caps.
5. Press pins out while supporting DIN shears.

CAUTIONS

1. Never disconnect hoses, install, or remove attachments with power unit operating.
2. When cutting with either DIN or Series 150 shears, keep blades perpendicular (90°) to material to be cut.
3. Make sure material to be cut is secure on each side of cut to prevent twisting and released material from becoming a projectile.
4. Never lay disconnected hose ends onto a dirty or dusty surface. Interconnect male and female hose ends to prevent entry of foreign material.
5. Use only hydraulic fluid recommended or supplied by manufacturer for use in the Hurst Rescue Tool.
6. Always wear protective clothing, gloves, and eye and head protection when working with the tool.

A I R B A G S Y S T E M

A Vettors "High Capacity System 161" consisting of eight air bags, regulator, safety relief valve and hose is carried in the center section of the front compartment of the rear module. Lifting capacity of individual bags varies from 14,400 lbs. (6,500 kg) to 80,200 lbs. (33,000 kg). Total lifting capacity is 316,400 lbs. (140,000 kg). Lifting height at full inflation varies from 6.3 inches (16 cm) to 17.7 inches (45 cm). Air capacity at full inflation varies from .24 cubic feet (6.8 litres) to 3.06 cubic feet (86.7 litres). Total air capacity of the eight bag system at full inflation is 10.04 cubic feet (284.6 litres) at 90 psi (6 bar).

AIR BAG SET UP PROCEDURES

Once the determination to use the air bag system is made, several components of the system must be removed from the apparatus and taken to the rescue site:

1. Desired Air Bags.
2. Air Hoses.
3. Control/safety valve assembly.
4. Pressure Regulator (unless a 100 PSI/7 bar air supply is to be used).
5. Compressed Air Cylinder(s) or adapters for alternate air sources.
6. Cribbing (enough to do the job plus extra, as there is rarely enough the first estimate).

Once all necessary components are at the rescue site, the air bag(s) can be put in place, air supply connected to the regulator, air control/safety valve installed between the regulator and bag. Now is the time to make another assessment of the situation to be certain your chosen plan of action will best accomplish your goal. (Be sure adequate cribbing is at the site.)

CAUTION: The regulator and air control/safety valve can be damaged if dropped. The air control/safety valve assembly should be placed as far from the actual lifting site as possible to reduce the trip hazard of the air hoses. The compressed air cylinder should be protected from personnel working in the area.

TRAINING TIP: To lift a load heavier than the capacity of a particular bag, place a second bag under the object next to the first bag and inflate both bags simultaneously.

OPERATIONAL PROCEDURES

Although the tool is billed as a one-man rescue tool, it is safer and more efficiently used when two or more rescuers are involved in the effort. It is best to have an air control valve operator and minimum of one cribber. Both personnel should participate in the size-up and plan of action phases of the operation. This procedure should set the stage for the coordination between the personnel.

CONTROL VALVE OPERATOR'S RESPONSIBILITY

1. To insure the proper set-up and placement of the system.
2. To size up the situation and develop a plan of action in a coordinated effort with other rescue operations at the scene.
3. To guard the safety of the system components and personnel in his immediate vicinity.
4. To operate the control valve and coordinate lifting and cribbing operations.

CRIBBER'S RESPONSIBILITIES

1. Assists in size-up and developing the plan of action for the air bag use.
2. Insure the safety of the victim and all personnel in the immediate vicinity of the object being moved by the air bags.
3. Build cribs as the object is being raised or spread.
4. Coordinate cribbing and lifting with the control valve operator.
5. Assist in the removal of the victim.

LIFTING FLAT LOADS

1. Insert air bag(s) under load at the desired lifting point.
2. Connect regulator air supply.
3. Connect air control/safety valve assembly to regulator and air bag air hoses.
4. Inflate bag(s) and crib load as it is lifted.

CAUTION: Do not place hands or other body parts in such a position as to cause them to be crushed or trapped if the system should shift or suddenly fall.

TRAINING TIPS:

- A minimum of one inch of space is required for inserting the air bag.
- Under objects that are not on the ground, the air bag(s) could be placed on top of cribbing in order to attain the desired reach.
- Cribbing should be built as the load is lifted.

LIFTING WHEELED LOADS

1. Chock all wheels.
2. Insert air bag(s) under load at desired point(s).
3. Connect air source and control/safety valve to air bag(s).
4. Inflate bag(s) and crib load as it is lifted.

CAUTION: The vehicle may roll during the lifting operation if the front and rear of wheels contacting the ground are not chocked.

TRAINING TIP: To reach the frame of wheeled loads, it may be necessary to place the air bag(s) on cribbing.

LIFTING CYLINDRICAL LOADS

1. Insert air bag on each side of load, at desired lifting point.
2. Chock load on both sides and at the opposite end where load will maintain contact with the ground.
3. Connect air source and control/safety valve to air bag.
4. Inflate both bags simultaneously.

CAUTION: Inflation of the bags individually may cause the load to roll.

LIFTING LOADS EXCEEDING THE CAPACITY OF THE AIR BAG

Loads weighing more than the rated capacity of a single bag may be lifted by utilizing two or more bags. When using this method, the bags must not be stacked one on top of the other, as this will limit the lifting capacity to the bag with the lowest rated capacity. All bags in this operation must be inflated at the same time in order to achieve the maximum lifting capability.

CARE AND MAINTENANCE

BAGS

1. Inspect after each use.
2. Remove any foreign objects that may be on the bag surface, such as broken glass and debris.
3. Wash bag in soap and water. Avoid getting water in the bag. If water does get in, allow the bag to thoroughly dry before the next use.
4. Cuts on the neoprene surface can be repaired with rubber cement.
5. Leak test the bag by pressurizing to 30 PSI for 30 minutes. If a loss of pressure has occurred, immerse in water or soap solution. The appearance of small air bubbles around the connection pipe/air inlet is of no significance with regards to the safety and operational readiness of the bag and may be disregarded.
6. It may be possible to patch a bag leak by vulcanizing a tire patch over the opening. Certain types of holes can be repaired with rubber plugs similar to those used for tubeless tires. After a bag is repaired in these manners, it should be tested after every use.
7. Check for damage on the air inlet nipple.

EXTENSION HOSES

1. Keep couplings clean and dry.
2. Broken hose must be recoupled or replaced.
3. Inspect for any cracks or nicks.

COMBINATION CONTROL VALVE & SAFETY RELIEF (CVSR)

1. Keep couplings clean and dry.
2. Replace broken gauge.
3. If safety relief is held open by a foreign object on the valve and it is not possible to blow out the foreign object by activating the deflating device, then the complete upper part of the valve must be screwed off and the foreign object removed. The upper part of the valve must then be screwed on again tightly.

TWO STAGE REGULATOR ASSEMBLY

1. Keep clean and dry.
2. Do not lubricate.
3. Operator should limit repairs to lens replacement only.
4. Any other repairs should be made by an authorized dealer or returned to PARTNER INDUSTRIES OF AMERICA, INC.

TRAINING TIPS

DO'S

1. Have plenty of cribbing material available prior to beginning the lifting or spreading operation.
2. Crib as the object is lifted or spread.
3. Prior to inflating the air bag(s) check all sides of the object to determine the total results of inflating the air bag(s).
4. Place the pressure regulator in the system when using compressed air cylinders or air supplies developing over 100 PSI.
5. Coordinate your efforts with those of other rescue operations at the scene.
6. Place the bag(s) so the load is as close to the center of the bag(s) as possible.
7. Insure total stability of loads being lifted during windy conditions.
8. Chock all wheels on vehicles and all round or cylindrical objects before lifting.
9. Place air bags on cribbing to gain better reach of the air bag.
10. Kink the air hose prior to disconnecting it from the air control valve assembly.

DON'TS

1. DO NOT begin lifting or spreading operations without necessary cribbing and the cribber at hand.
2. DO NOT inflate the air bag(s) with compressed air cylinders or air supply systems of over 100 PSI without the pressure regulator being in place in the system.
3. DO NOT lift, bend or spread anything without determining what the total effect of your operation will be.
4. DO NOT lift wheeled or cylindrical objects without first chocking them to eliminate rolling during the operation.
5. DO NOT place air bags under hot objects (exhaust pipes, etc.).
6. DO NOT use cylinders of compressed gas other than air for inflating the air bag(s).
7. DO NOT stack cribbing on top of the air bags in order to achieve better reach.
8. DO NOT disconnect the air hose from the control valve assembly when the bag is inflated without first kinking the air hose.
9. DO NOT wait until maximum lift or spread is attained before cribbing is started.
10. DO NOT attempt to adjust the safety valve assembly.
11. DO NOT perform your operation with disregard for other rescue operations and personnel on the scene.

DESCRIPTION

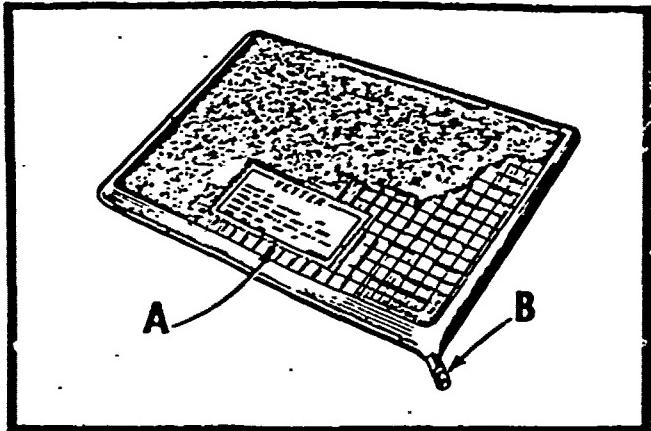


FIG. 1

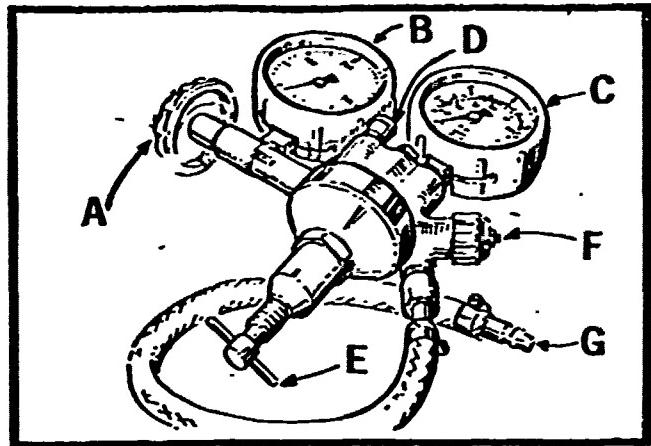


FIG. 2

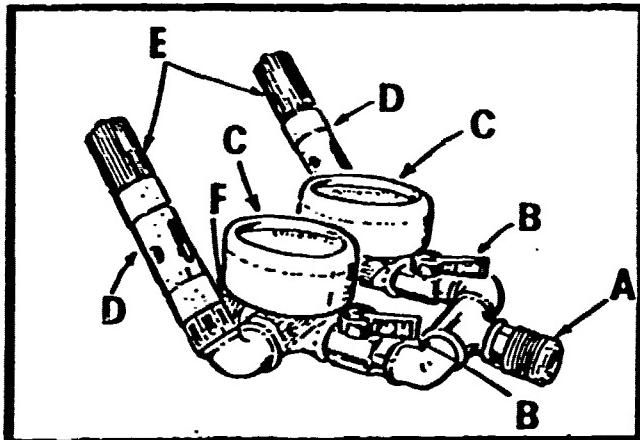


FIG. 4

1. Bag (Fig-1)

- A. Technical Data Label
- B. Air inlet nipple

2. TWO STAGE REGULATOR (Fig-2)

- A. High pressure air inlet
- B. High pressure gauge
- C. Low pressure gauge
- D. Regulator relief valve
- E. T. Handle to adjust low pressure range
- F. Knob controlling air outlet
- G. Air outlet & extension hose

4. DUAL COMBINATION CONTROL VALVE & SAFETY RELIEF (CVSR) II (Fig-4)

- A. Air inlet
- B. Control valve lever
- C. Operating gauge
- D. Safety relief assembly
- E. Safety relief control knob
- F. Air outlets

USE AND HANDLING

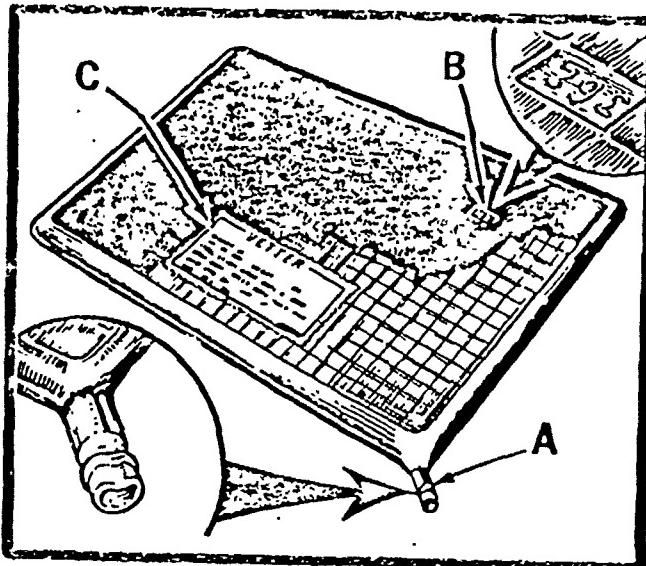


FIG. 5

BAGS

Inspect them and look for any obvious shipping damage. Check to see that the air intake is not bent or loose (Fig. 5A). The neoprene jacket may appear uneven at the edges. This can be disregarded. Each bag has a size code embossed into the outer surface and may appear as a blemish (Fig. 5B). Do not overly concern yourself with the surface appearance of the neoprene. These bags are made to be durable. If there is any damage, please report this immediately to your dealer or our Service Dept. through our toll free number (800) 435-9358. Now look at the label and learn the meaning of the printed data (Fig. 5C).

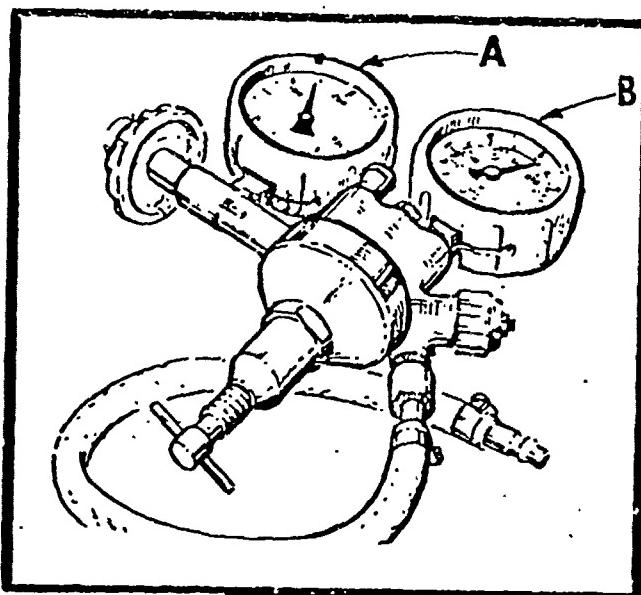


FIG. 6

HIGH PRESSURE REGULATOR

This regulator must be used whenever you use a high pressure air source, such as, a breathing air cylinder. Check for damaged gauge lenses. The gauge closest to the air intake will give the operator a reading of the pressure of his air source (Fig. 6A). The second gauge indicates the low pressure operating range of the Air Bags (Fig. 6B).

WARNING

OPERATING PRESSURE NOT TO EXCEED 100 PSI ON LOW PRESSURE SIDE (Fig. 6B).

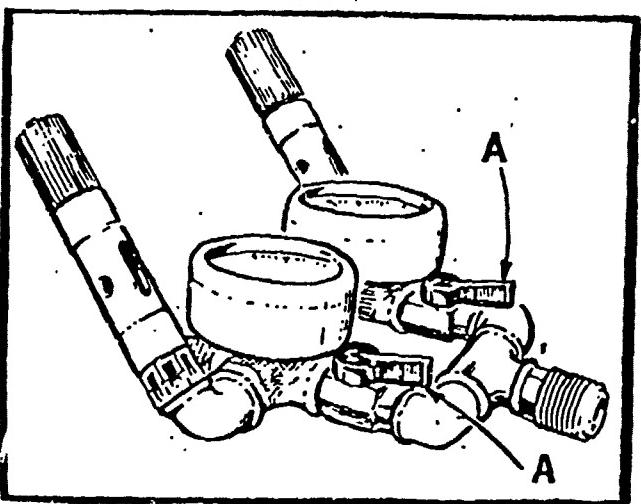


FIG. 8

COMBINATION CONTROL VALVE AND SAFETY RELIEF (CVSR II) (DUAL)

This accessory is used in place of the CVSR I for use with two bags from the same air source. Both valves work independently to give the operator separate control of both bags. They are located at the rear of the gauge (Fig. 8A).

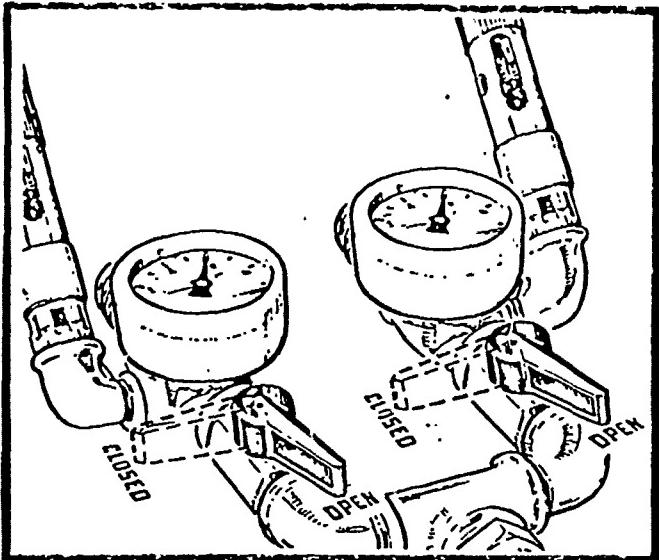


FIG. 10

CONTROL VALVES DUAL CVSR II

The control valves on the CVSR II are also quarter turn ball valves. The two controls work independent of each other and are open when the handles are parallel with the air line; and closed when the handle is perpendicular with the air line.

When the control valves are not in use, they should remain closed (Fig. 10).

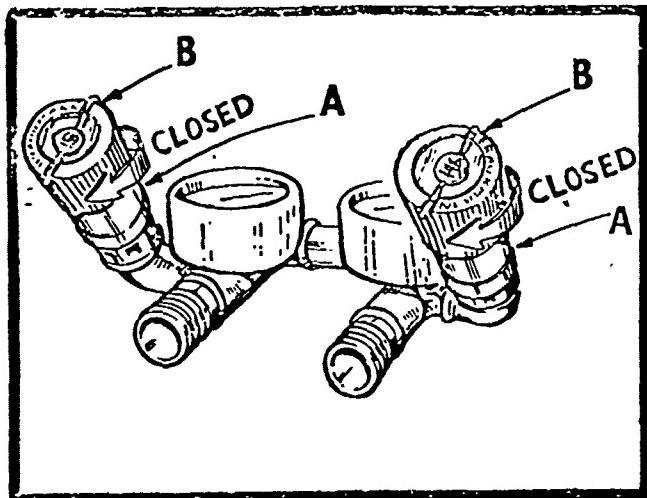


FIG. 12

DUAL CVSR II SAFETY RELIEF

The safety relief portion of the CVSR II are brass spring loaded cylinders directly behind each gauge (Fig. 12A). Each relief valve is factory set at 6 atm (approx. 90 PSI). The settings are indicated by the lead/wire seals across the top of the vent knobs (Fig. 12B).

These vent knobs allow the operator to control the deflation of the bag or bags as easily as they were inflated. The vent knobs should remain closed when not in use.

WARNING

DO NOT USE CVSR II IF THIS SEAL (Fig. 12B) IS NOT IN PLACE OR HAS BEEN TAMPERED WITH. BRING IT TO THE ATTENTION OF YOUR DEALER OR OUR SERVICE DEPARTMENT.

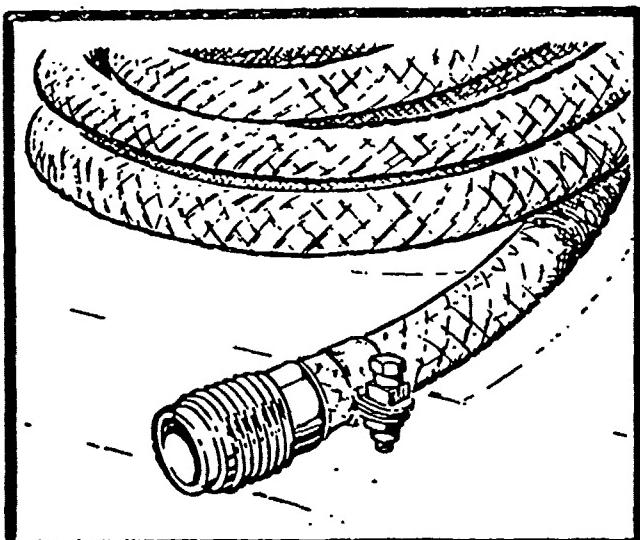


FIG. 13

AIR HOSES

Upon receipt, check for obvious damage to the hose and couplings (Fig. 13). If the hose has hand fitted coupling clamps, make sure they are well set and tight.

RULES FOR SAFE OPERATION

WARNING

READ RULES FOR SAFE OPERATION BEFORE OPERATING THE BAGS.

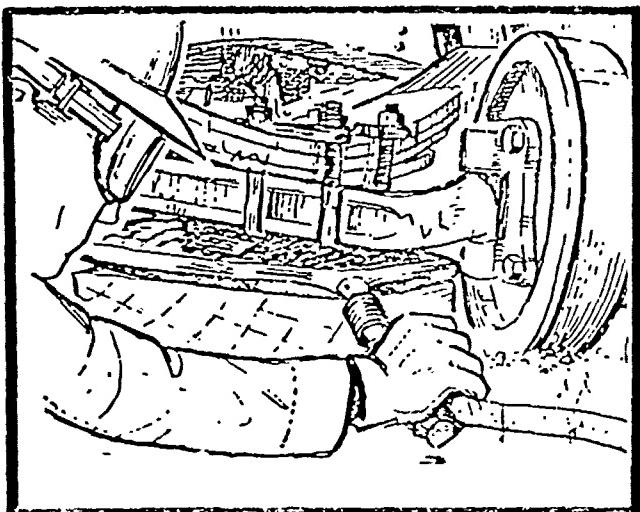


FIG. 14

1. All personnel using and assisting with the Bags should wear safety clothing, i.e., helmets, eye protection, gloves, safety boots, etc. (Fig. 14).

2. Before raising an object, careful evaluation should be made to pre-determine desired height or load movement. This allows you to obtain, in advance, all the necessary blocks and/or shoring before you commit the Bags.

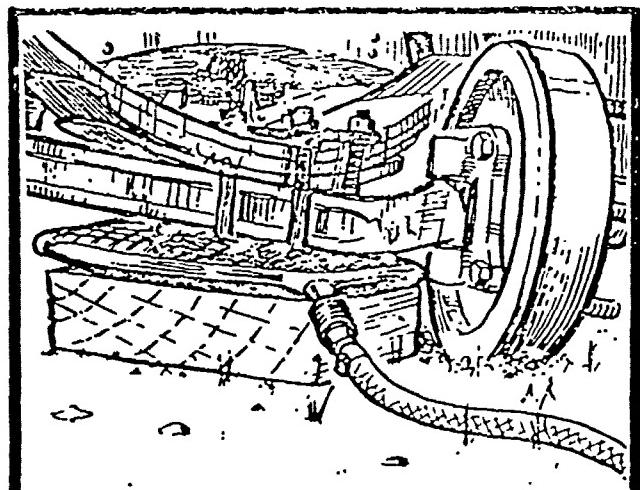


FIG. 15

3. Always maximize the contact area of the Bag. This may require you to either block up the Bags before inflating (Fig. 15) or to use the two Bags simultaneously.

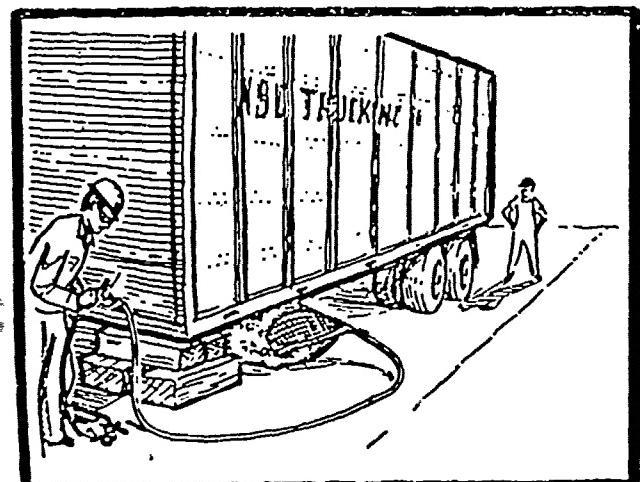


FIG. 16

4. As the Bag is being inflated, stand to one side and clear all other personnel from the vicinity. Do not stand in front of the opening where the Bags have been placed, as there is a possibility of Bags being pushed out by the load shifting (Fig. 16).

RULES FOR SAFE OPERATION (Con't.)

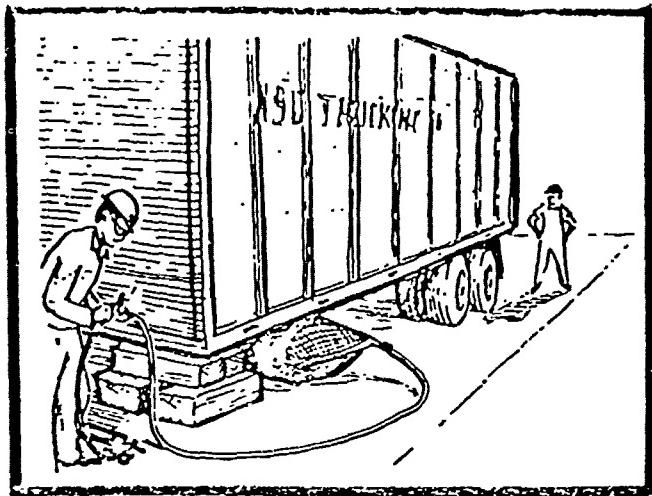


FIG. 17

5. As the load is being moved or lifted, always block and/or shore the load (Fig. 17).

- A. When blocking, have the operator stop the lift. After blocking, resume the lift.
- B. Use blocks and shoring that will be able to assume the load. Remember, although the Bag does not need a smooth surface, blocks and shoring do.
- C. Never work under a load supported only by Bags.

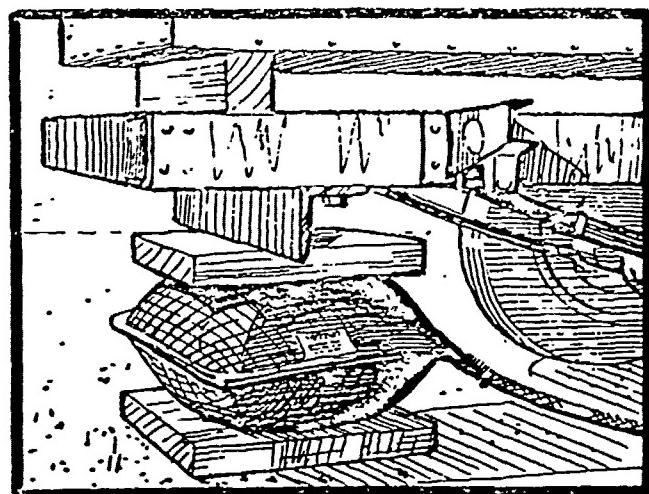


FIG. 18

6. Never inflate bags against sharp objects or on a heated surface over 200 degrees fahrenheit. When it is necessary a block can be placed between a hot or sharp surface to protect the bag (Fig. 18).



FIG. 19

7. Two bags may be used safely from a CVS II (Fig. 19).

- A. This allows for greater lift height.
- B. Never stack more than 2 bags at a time.

RULES FOR SAFE OPERATION (Con't.)

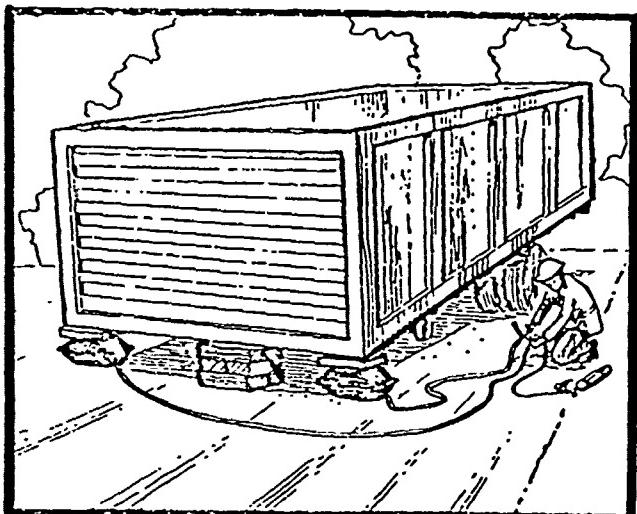


FIG. 20

- C. Allows you to lift the same load at two separate points to maximize surface contact (Fig. 20).

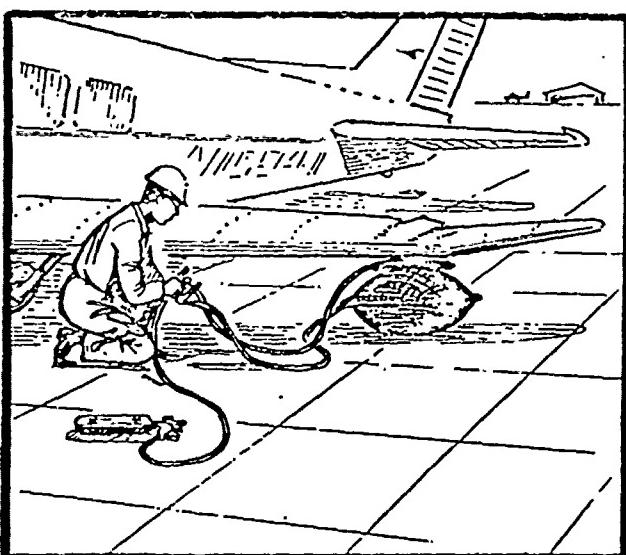
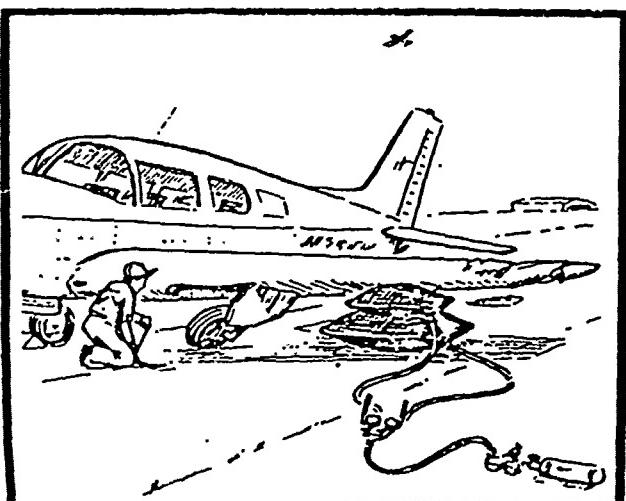


FIG. 21

- D. When using two bags, put a smaller bag on top of a larger one, i.e., an M-18 on the bottom and an M-14 on the top (Fig. 21). Use the CVSR II with a separate gauge and operating lever for each bag (Fig. 19).

- E. When using two bags always inflate the bottom bag first (Fig. 21).



- 8. When using the air bags, always inflate at a slow rate.
- 9. Never operate bags, hoses, valves, regulators, etc., that are damaged or improperly assembled.

OPERATING INSTRUCTIONS

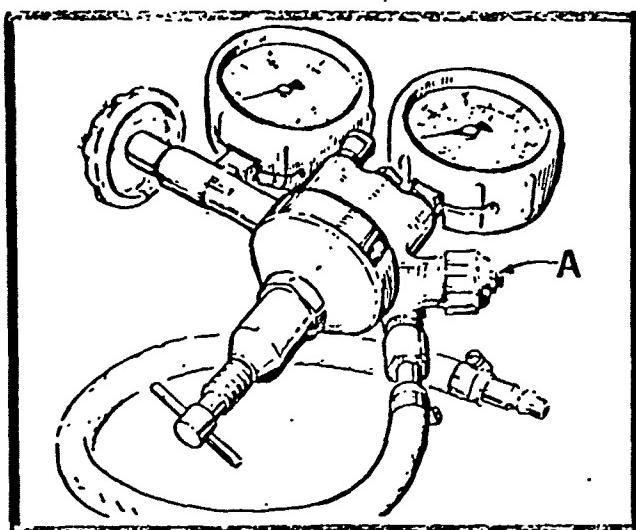


FIG. 23

2-STAGE REGULATOR

1. Set the 2-stage regulator.

- A. Close regulator air outlet by turning knurled knob (Fig. 23A) clockwise.
- B. Connect regulator to a closed high-pressure air source (Fig. 24A).
- C. Open air source and observe gauge. High pressure gauge should reflect air source pressure (Fig. 24D).
- D. Set low pressure gauge (Fig. 24B) to 100 PSI by screwing or unscrewing the 'T' handle (Fig. 24C) at the bottom of the regulator.

NOTE

MINIMUM LOW PRESSURE NOT TO GO BELOW 90 PSI (Fig. 24B).

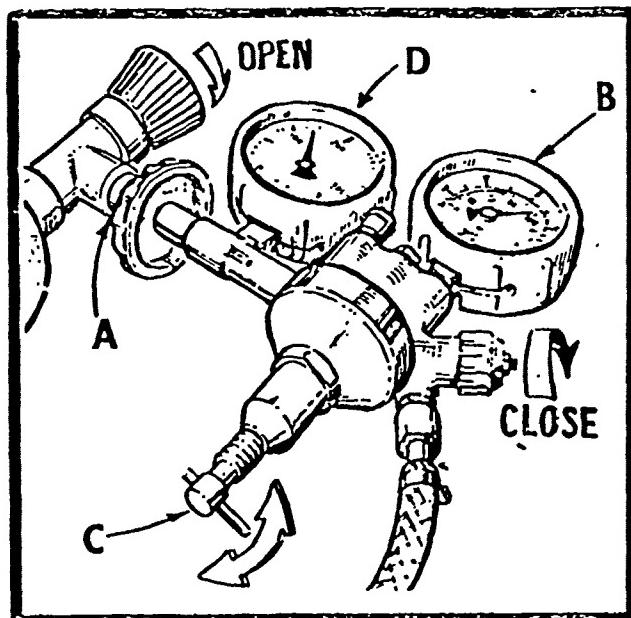


FIG. 24

WARNING

MAKE SURE ALL VALVES ARE IN THE CLOSED POSITION BEFORE YOU TURN ON YOUR AIR SOURCE. THIS WILL REDUCE RISK OF ANY UNCONTROLLED LIFT.

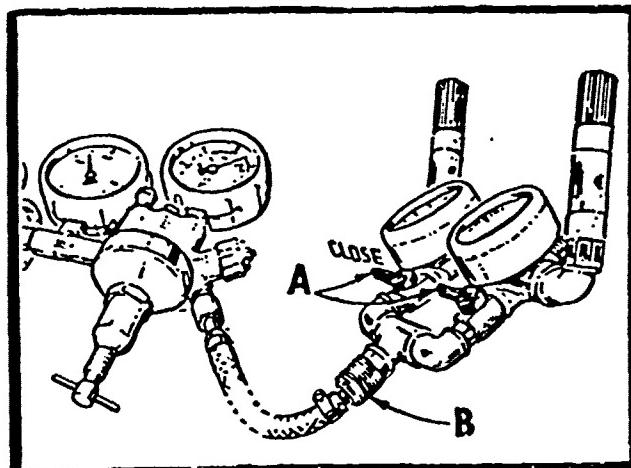


FIG. 26

DUAL CVSR II

Check both control levers to make sure they are in the closed position (Fig. 26A). Then, connect the regulator to the control valve and safety relief inlet (Fig. 26B).

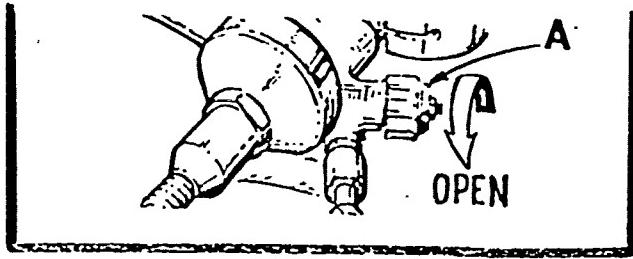


FIG. 27

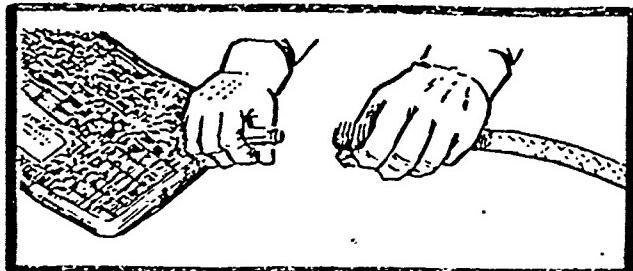


FIG. 28

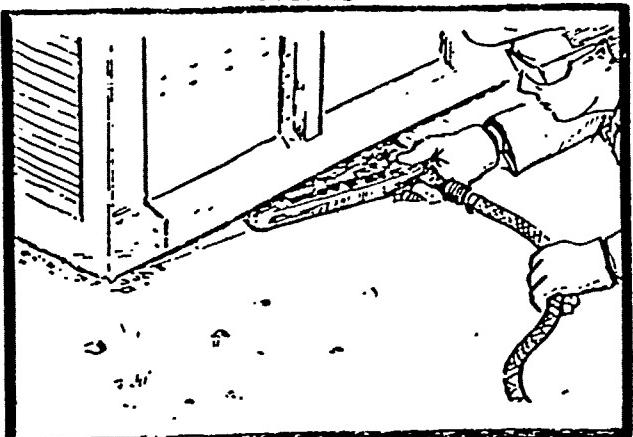


FIG. 29

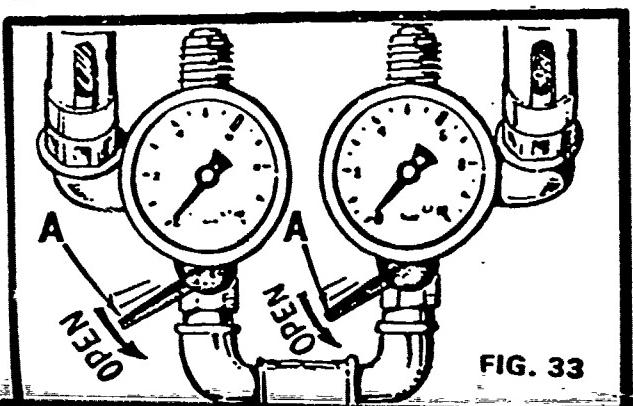
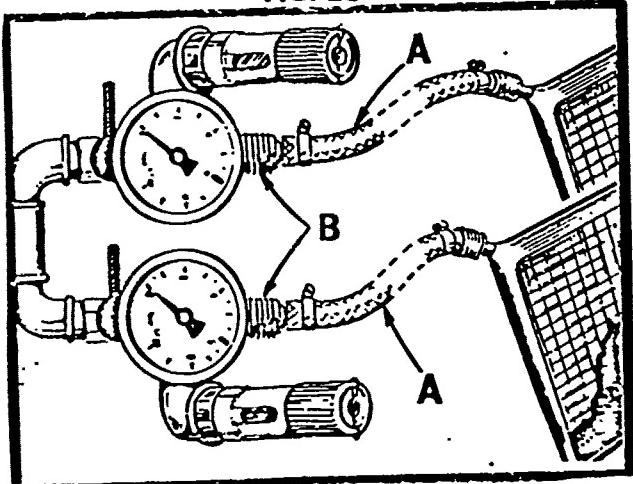


FIG. 33

3. Now, go back to the 2-stage regulator and fully open the knurled air outlet valve (Fig. 27A) counter-clockwise. This will bring the air up to the control valve.

4. Select bag and connect an extension hose to the inlet nipple protruding from one corner of the bag (Fig. 28).

WARNING

ALWAYS HAVE BAG CONNECTED PRIOR TO PLACING THE BAG UNDER OR BETWEEN THE LOAD TO MINIMIZE THE OPERATOR'S EXPOSURE TO THE LOAD AREA AND ELIMINATE THE POSSIBILITY OF THE OPERATOR PLACING THE BAG WITH THE AIR INLET UNDER THE LOAD.

5. Place the bag under the load with the air inlet protruding. Always place the bag as close to the load as possible (Fig. 29). The smaller the opening, the better. This will maximize the contact area between the bag and the load and make for much more efficient lift.

DUAL CVSR II

Connect the extension hose (Fig. 31A) to one (or both when using two bags) of the outlet connectors (Fig. 31B) on the dual control valve and safety relief.

Make sure that BOTH safety relief valves are in the closed position.

WARNING

THE BAG SHOULD BE INFLATED SLOWLY TO MINIMIZE CHANCE OF THE LOAD SHIFTING.

DUAL CVSR II

Open one control valve at a time by slowly moving the control lever (Fig. 33A) parallel to the air line. The bag will gradually inflate. Speed of inflation is controlled by this lever.

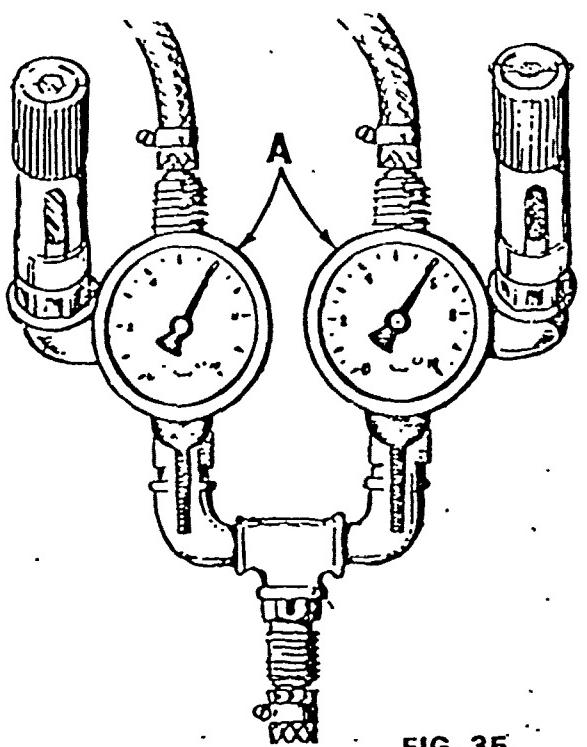


FIG. 35.

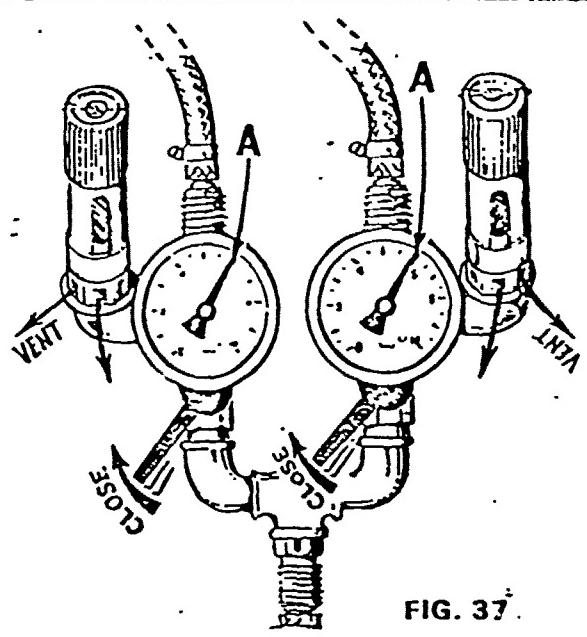


FIG. 37.

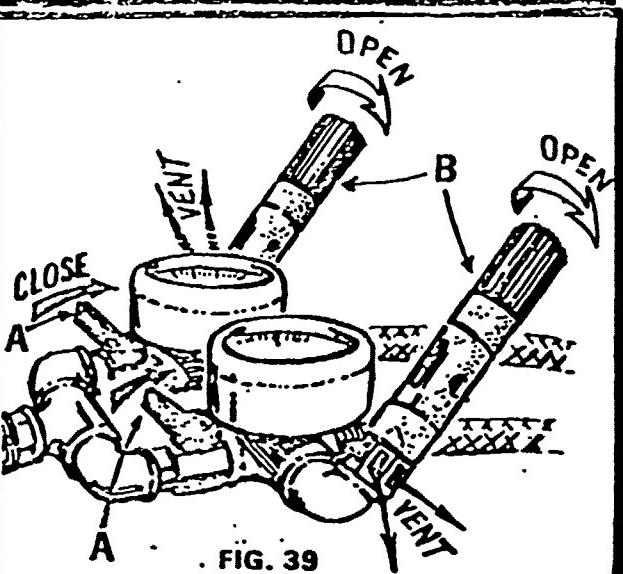


FIG. 39

DUAL CVSR II

As each bag is being inflated, note gauge reading on the control valve and safety relief (Fig. 35A). As each bag is being inflated, the bag pressure will be reflected on the gauge that the bag is hooked up to. Allow the bag or bags to fill just enough to lift the load as far as needed.

DUAL CVSR II

If one or both of the gauge readings reach the vicinity of the RED MARK (atm - 90 PSI) (Fig. 37A), the safety relief should open and begin venting. At this time, close the control lever or levers to conserve the air supply. If the desired lift results are made before the bag reaches maximum pressure, simply close the black control lever.

WARNING

ONCE THE LOAD IS LIFTED TO DESIRED HEIGHT, BLOCK OR SHORE THE LOAD.

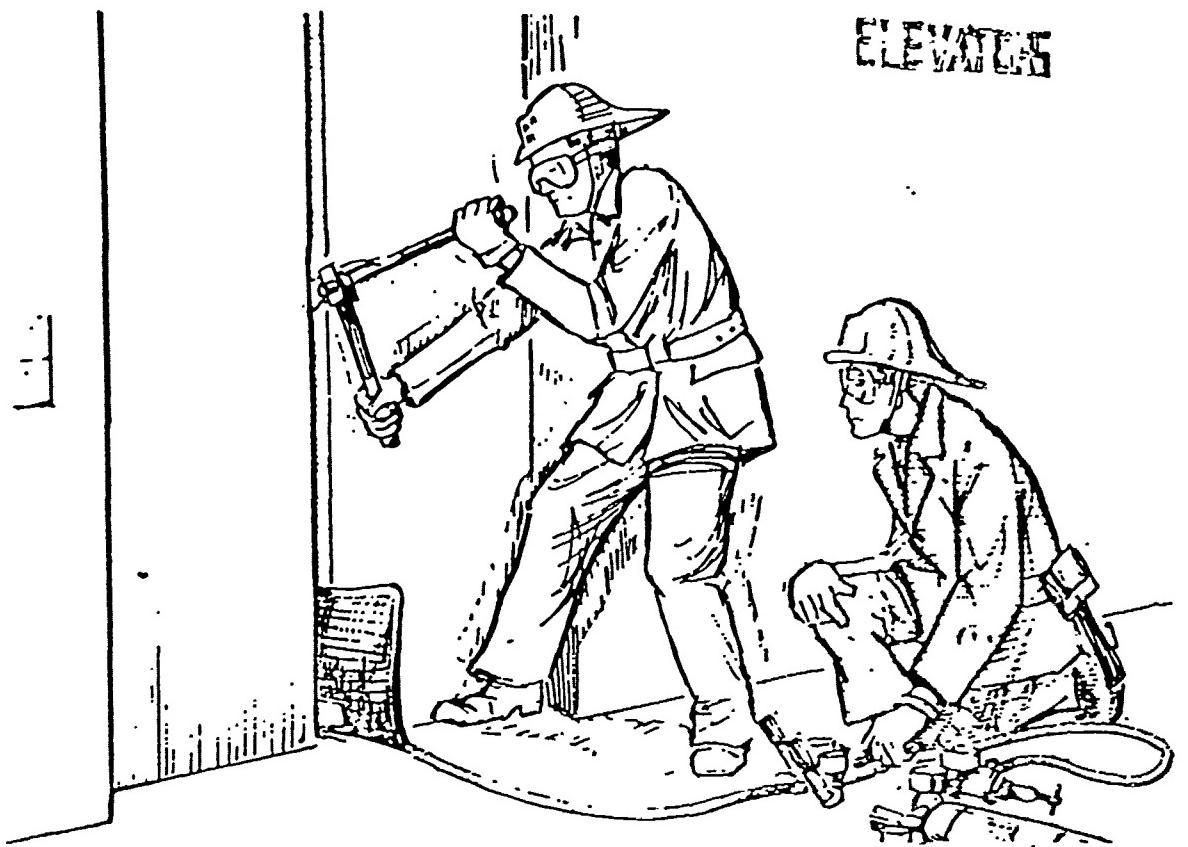
DUAL CVSR II

To lower bags with the CVSR II, close both control levers (Fig. 39A). Then, one at a time, slowly turn the safety relief counter-clockwise (Fig. 39B). The lowering speed is adjusted by the operator. Once one bag is deflated, then repeat operation for the second bag.

NOTE

BAG WILL INFLATE AND DEFLATE SLOWLY. IT IS DESIGNED IN THIS MANNER SO THAT THERE WILL NOT BE ANY QUICK MOVEMENTS TO HEAVY LOADS WHICH COULD THROW THEM OFF CENTER

APPLICATIONS

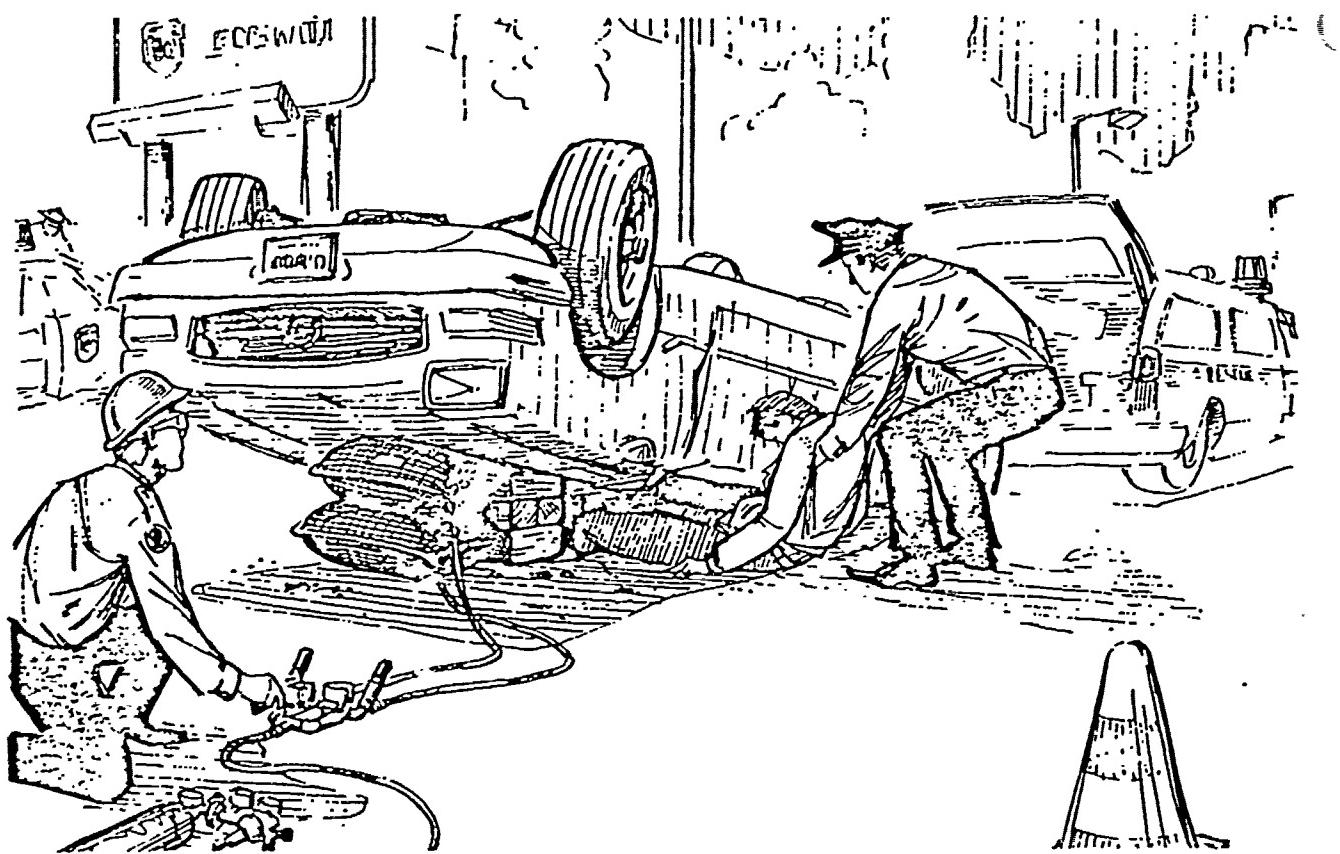


forcing open jammed elevator door.

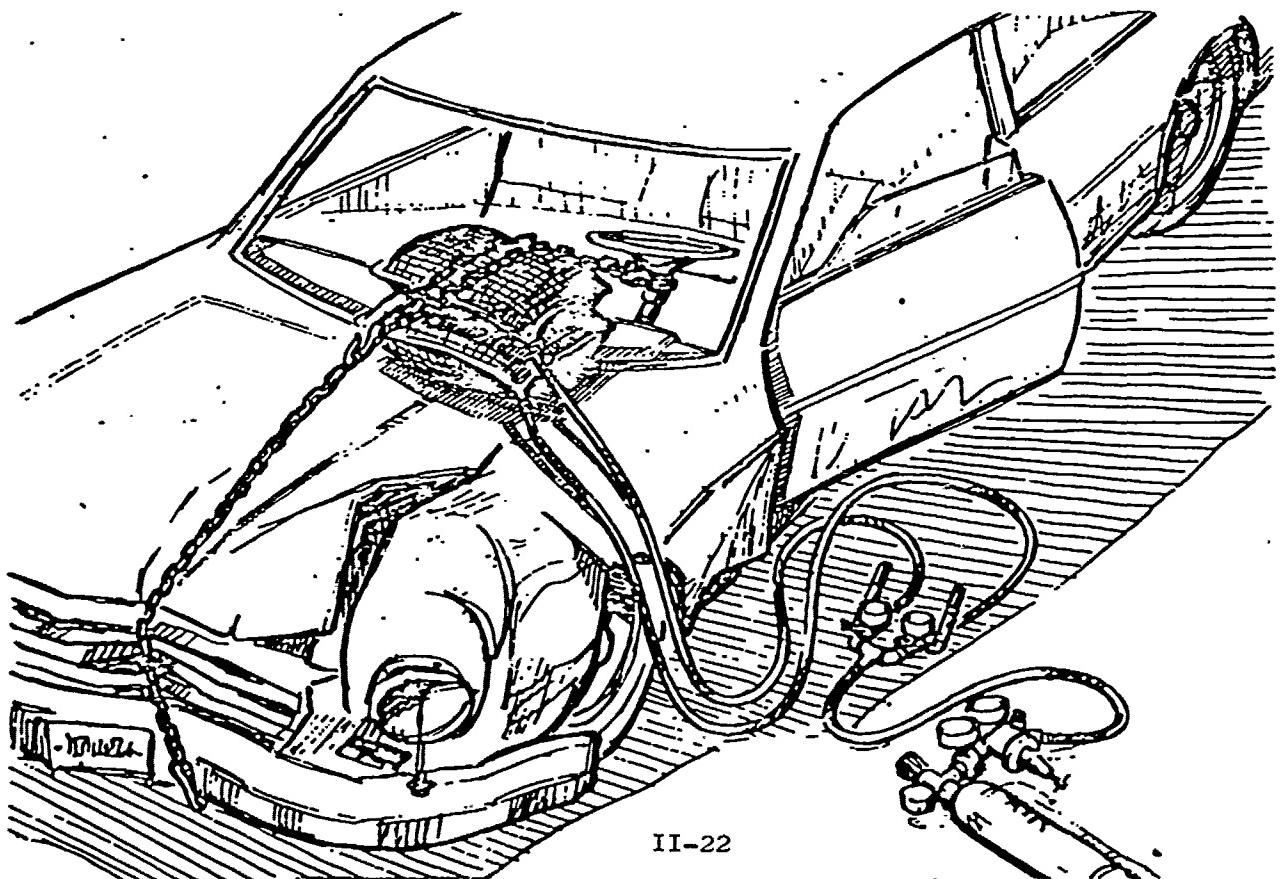


freeing trapped victim in public transportation vehicle.

APPLICATIONS



lifting car to free trapped victim.



II-22

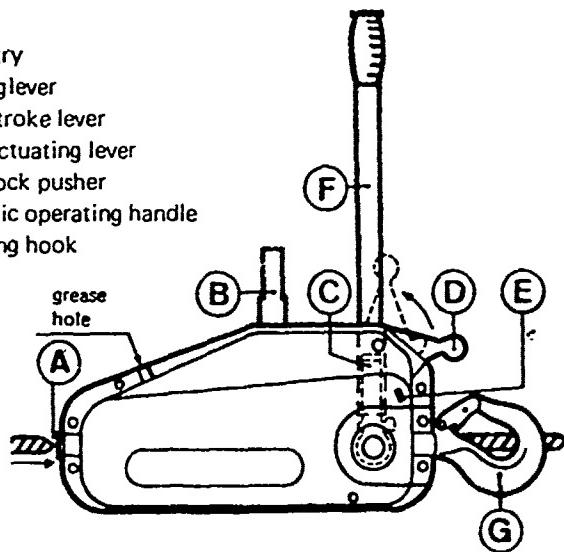
bending steering column.

G R I P H O I S T R E S C U E K I T

A Griphoist TU-17 Rescue Kit is carried in the lower rear compartment on driver's side of vehicle. The machine has a safe working capacity of 2,000 pounds (900 kg). It may be used for either lifting or pulling operations.

SET UP AND OPERATION

- A - rope entry
- B - reversing lever
- C - power stroke lever
- D - clutch actuating lever
- E - clutch lock pusher
- F - telescopic operating handle
- G - anchoring hook



1. To introduce the wire rope into the machine, proceed as follows: Place reversing lever (B) into vertical position. Press on clutch lock pusher (E). Lift clutch actuating lever (D) - while releasing pusher - until it is locked. This opens the two jaw-blocks.
2. Unreel the wire rope with care. Insert the tapered end into rope entry (A) and push through until it emerges at hook end. Pull the rope through the machine by hand until the required working length is obtained.
3. Place clutch actuating lever back into operating position. This is done by lifting slightly the lever (D) and pressing the clutch lock pusher (E), allowing the spring inside the machine to carry it into its initial position. The machine is now ready for use.
4. Anchor the GRIP HOIST TU-17 by its hook (G), using a sling or chain, to any resistant, fixed point (for instance, a ring in the ground, an upright post, a beam placed across a door opening or window, or across the opening of a manhole, a tripod, a mast, etc.). As GRIP HOIST machines work equally well in any position -- horizontally, vertically, or diagonally -- the operator may choose the anchoring point most convenient to his needs.

PULLING OR LIFTING

Fix the operating handle (F) on power stroke lever (C). Full to and fro lever action is required to move the rope through the machine.

SLACKENING THE ROPE OR REVERSING

Fix the operating handle on reversing lever (B) and move to and fro.

On completion of the operation, slacken the wire rope completely by operating reversing lever (B). To disengage, repeat operation described under 1. and remove the wire rope. As the jaws are locked by the tension of the rope, it is impossible to release the clutch while the GRIPHOIST is under load.

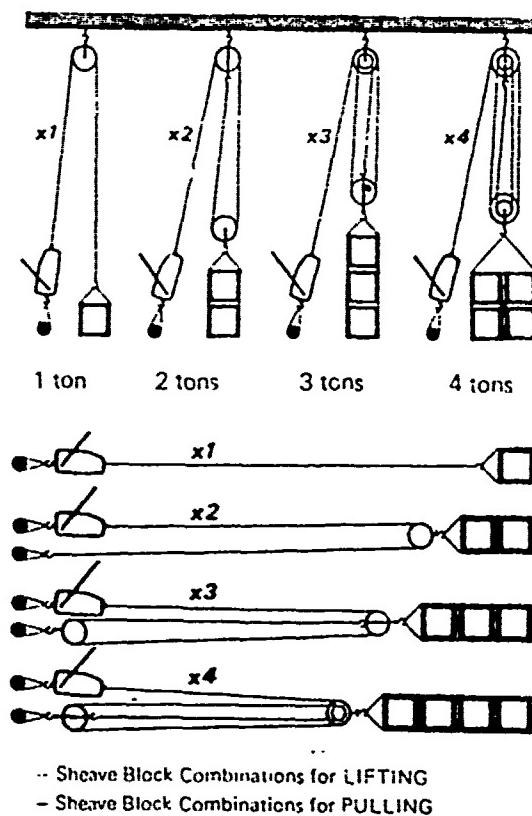
WORKING INSTRUCTIONS

1. Make absolutely sure that the effort required from the hoist does not exceed the rated capacity of one ton.
2. Anchor by means of an independent sling or chain so that the unit is in line with the load in the most advantageous working position.
3. Power stroke lever, reversing lever and clutch actuating lever must move freely at all times.
4. Never operate power stroke lever and reversing lever at the same time.
5. Outlet end of unit -- at hook -- must be unobstructed or the wire rope will be forced back inside the unit.
6. Use only the original wire rope approved for use by the manufacturer.
7. The wire rope should be reeled and unreeled in a straight line to prevent loops or kinks. Kinked rope will not work in the GRIPHOIST machines. For this reason, NEVER USE THE ROPE FOR A SLING. Instead, a separate wire rope or chain sling should be used.
8. The wire rope outlet of the machine should not be obstructed. The cable must be able to pass freely to prevent its being forced back into the unit.
9. Never subject the wire rope to abrasion by rubbing over sharp edges.
10. Be sure that the wire rope is wiped clean before inserting it into machine (oil or grease is desirable).
11. For longer life and better performance the wire rope should be oiled well from time to time. It is recommended to occasionally dip it into a hot bath of compound oil.
12. To avoid unspinning of the strands, never allow a loaded cable to rotate.

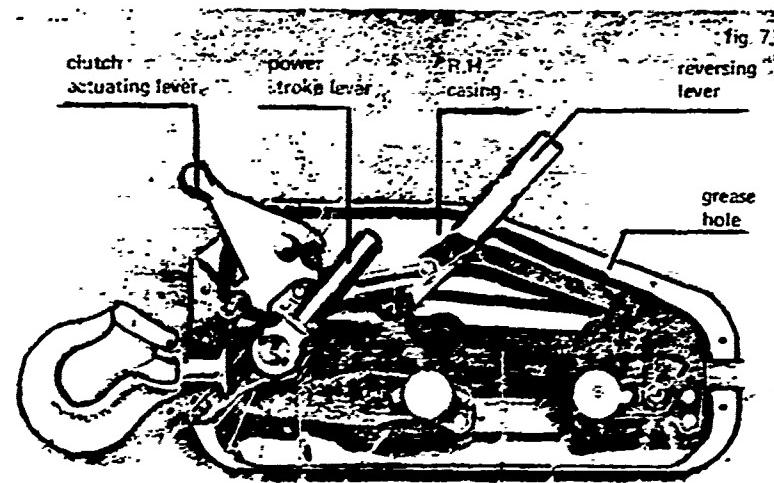
INCREASING CAPACITY

As the wire rope passing through the machine is not coiled up inside, there is no limit to the length of pull or height of lift. The rope is therefore easily used to increase the nominal capacity of the GRIPHOIST with pulley blocks.

Sketches above illustrate how nominal capacity can be multiplied two, three, and even four times. For best working conditions, it is however necessary to make a 10 to 15% allowance for loss through friction.



CARE AND MAINTENANCE



Although the steel casing provides good protection, dust and dirt can penetrate into the mechanism through the top opening of the casing, as well as through the guide holes of the wire rope. The machine should therefore never be left lying about in mud and the wire rope should be cleaned before it is introduced into the machine.

1. Current Maintenance Cleaning:

Dip machine into a gas-oil bath, shake well to dislodge foreign matter and turn quickly upside down to remove them. To lubricate, squirt lube oil through top opening into the internal mechanism in the direction of the apparent articulations.

2. If the machine is dirty:

Mechanism clogged with earth, sand or abrasive dust. Lay the machine down on the left side. Unbolt the casing. Remove right-hand casing; this gives access to the mechanism which can be cleaned with a brush and gas-oil. Lubricate generously. Rebolt casing halves; take care that the ends of clutch actuating lever pin, the clutch lock pusher, the clutch spring, the rope entry, and the anchoring hook are set back in their initial positions.

3. Lubrication:

For current lubrication, squirt a semi-fluid high pressure oil through the apertures in the casing. To allow the lubricant to penetrate to all the parts of the mechanism, alternately operate power stroke lever and

reversing lever. Repeat lubrication as described above, as far as possible each time machine is used; also during drawn-out operations. Remember that machines cannot be overlubricated. Excess lubrication will not cause the wire rope to slip. Lack of lubrication, on the contrary, is the greatest cause of malfunction due to wear or jamming of the bearings.

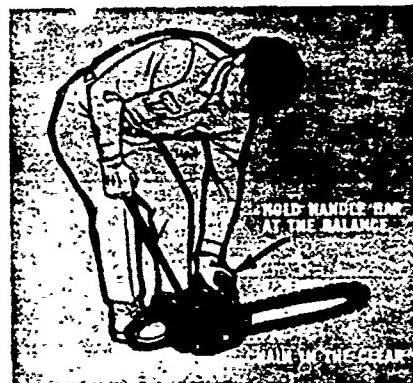
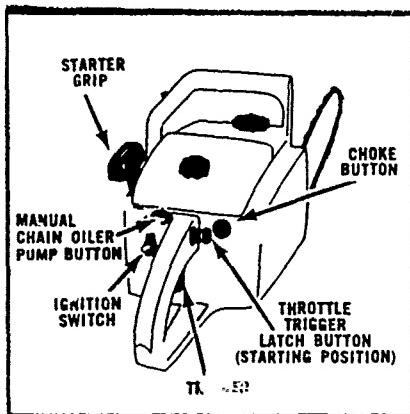
4. Maintenance of Wire Rope:

Before introducing wire rope into the machine, clean it with a wiping rag impregnated with oil.

C H A I N S A W

A Homelite "Super XL" chain saw is carried in the upper rear compartment of the rear module, passenger side of vehicle. The 2-cycle gasoline engine requires a fuel-oil mixture of 16:1. Use only high quality 2-cycle motor oil.

STARTING AND STOPPING



1. Be sure the ignition switch is at RUN. (To stop engine, flip switch to STOP.)
2. Choke the engine. (See drawing -- pull out choke button or depress choke lever.)
3. Latch the throttle trigger for starting: Squeeze the trigger, depress throttle latch button, AND let go of the trigger first. NOTE: Latch is automatically released when throttle trigger is squeezed.
4. Hold the saw firmly on the ground or on a stump, and be sure the chain is clear of all obstacles. The thumb should be wrapped around the underside of the handle bar and the other fingers curved around the top, as illustrated.
5. Pull the starter grip smartly to give a fast cranking spin to the engine. Hold the grip during rewinding. When engine fires but does not run, position choke about half-way and crank until the engine runs. As soon as it starts, squeeze and immediately release the trigger to unlatch the trigger and idle the engine. Pull up or push in the choke control.
6. A hot engine normally needs no choking, and can be started with the throttle latched or unlatched; but if no start results, latch the throttle open and use the choke. In freezing cold weather when the saw

is not to be used right away, choke the engine to a stop instead of using the switch. This leaves fuel in the engine for extra cold starting ease.

CHAIN OILING

The chain oil reservoir should be filled with an oil especially formulated for bar and chain lubrication. If such oil is not available, use SAE 20 or 30 weight motor oil. Under very cold conditions, oil which has stiffened should be thinned with kerosene to the point it flows freely.

Refill reservoir after each use. Check oil level frequently during operation. Push manual oiler button two or three times before use and at 3 to 4-minute intervals during extended operation.

PRECAUTIONS

Wear heavy duty, close-fitting work clothing, gloves, goggles, and hearing protection when working with or around the saw.

Hold saw properly and firmly with both hands while it is in operation. Grasp upper hand grip with fingers over the top and thumb under the grip bar.

Stand with your weight evenly distributed on both feet.

Don't try to force bar through material.

Don't place any torsional twist or lateral pressure up bar.

Kickback will be upward and toward you. Always stop engine before working on the saw or carrying it from one location to another.

R E S C U E S A W S

Two PARTNER rescue saws are carried in the upper rear compartment of the rear module on passenger side of vehicle. The K-65 utilizes cutting blades and discs with a maximum diameter of twelve inches (300 mm). The K-1200 utilizes cutting blades and discs with a maximum diameter of 14 inches (350 mm). As carried, the K-65 is equipped with a 12" (300 mm), all-purpose wood cutting blade. The K-1200 is equipped with a 14" (350 mm) metal cutting disc.

TO START

Fill fuel tank with proper gasoline-oil mixture -- 25:1 with 2-cycle motor oil or 50:1 with Partner oil.

1. Open throttle by compressing the throttle safety bar and trigger.
2. Push in and hold the throttle locking button.
3. Release tension on throttle trigger until lock engages. When the lock engages, release tension on throttle trigger.
4. Press down start button (red).
5. Press down choke button (blue).
6. Pull starter rope crisply until engine pops or starts.
7. Push choke closed.
8. Run for about 1/2 minute, then release throttle lock by compressing and releasing trigger.

PRECAUTIONS

- . Wear heavy duty, snug-fitting work clothing, head, eye, ear, hand, and feet protection.
- . Keep blade or cutting disc perpendicular to material being cut.
- . Don't allow torsional twist of blade or disc.
- . Don't force cutter through material being cut.
- . Stop engine before working on saw while carrying from one location to another.

L I N E G U N

A BRIDGER 45 Cal. SHOULDER LINE GUN - MODEL 7094 is carried in the lower section of the upper rear compartment of the rear module, driver's side of vehicle.

OPERATION

1. See that the bore of the gun is clear and free of oil and grease.
2. Place projectile in bore of gun, big end first. The projectile must slip down easily. If force is found necessary, do not use that particular projectile.
3. Place coil of line in canister so that the line may run freely from the center of the coil; or if line is wound on spindle, knock out spindle so line can run from center.
4. Wet 4 feet of line and attach to the projectile by means of three loose half hitches. Do not secure the loose end of the line.
5. DO NOT put blank cartridges into the gun until ready to fire.
6. Be absolutely sure projectile rests against cartridge wad.
7. Hold the gun at an angle of approximately 35 degrees, the butt hard against the shoulder, the left hand well over the receiver to keep the gun from jumping. Do not place the face near the stock as when firing a rifle. The recoil is considerable, but not excessive.
8. When firing, allowance should be made for wind.
9. After using, clean bore with powder solvent and grease gun thoroughly inside and out.

REWINDING

Lines may be easily rewound by hand, as follows:

Attach end of line to slit in small end of spindle. Wind closely up the spindle once to within about 2 inches of the end, then continue winding in the same manner as a kite string; i.e., diagonally to and fro, but (this is important) the spindle and whole reel must be constantly turned so as to allow the line to wind evenly and not bunch in the middle or at ends. When the line is rewound in this manner to about 12 feet of end, wind closely once over the whole reel and fasten end. The winding must be done quite tightly. The main requisite is to have the reel of line as evenly wound as possible, so that it will pay out from the center readily. Lines must be thoroughly dried before rewinding.

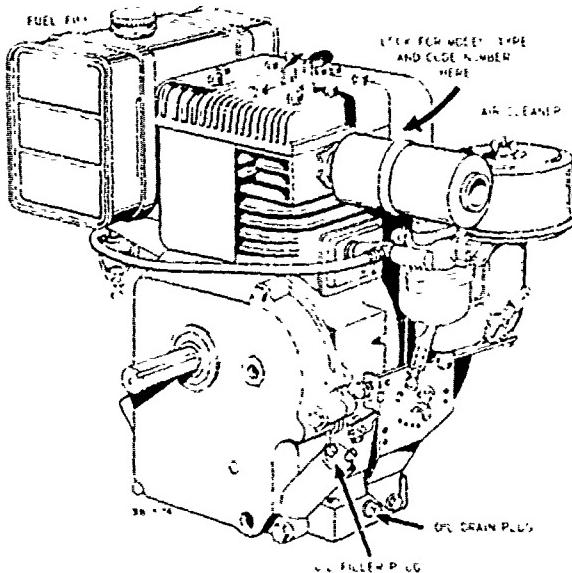
CAUTION

Rifle and projectile must be kept well oiled and free from rust. The projectile fits the bore closely; and rust might make it difficult to properly seat the projectile in barrel and allow it to move freely. Clean rifle often, as the compression is so great that a considerable amount of burned powder is liable to be left in the chamber of the barrel.

KIT CONTENTS

One	Gun Box	25	Blank Cartridges
One	Line Throwing Gun	One	Cleaning Rod w/Brush
Ten	Projectiles	One	Bottle Powder Solvent
One	Cannister	One	Can Oil
Three	Rewinding Spindles	One	Set Plastic Instructions

PORTABLE GENERATOR



A McCulloch portable generator, Model RA-330 is carried in the forward compartment of the rear module, passenger side of vehicle. Maximum output at 220 volts is 3300 watts with no 110 volt load. Maximum 110 volt output is 1650 watts with no 220 volt load.

BEFORE STARTING

1. Fill Sump with Oil - Use a high quality detergent oil classified "For Service SC, SD, SE or MS." Nothing should be added to the recommended oil.

SUMMER - (Above 40° F.) Use SAE 30
If not available, use SAE 10W-30 or SAE 10W-40

WINTER - (Under 40° F.) Use SAE 5W-20 or SAE 5W-30
If not available, use SAE 10W or SAE 10W-30
Below 0° F., use SAE 10W or SAE 10W-30 diluted 10% with Kerosene.

DIRECTIONS: Place the engine level. FILL THE OIL SUMP TO OVERFLOWING or to the FULL mark on dip-stick. POUR SLOWLY. (Capacity 2-3/4 pints.)

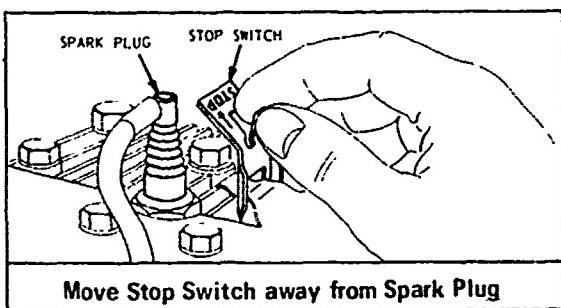
EXTENDED OIL FILL (Optional) - Remove cap and dip-stick and fill to full mark on dip-stick. When checking oil level, push dip-stick assembly firmly but slowly until cap bottoms on tube. Do not overfill. Dip-stick assembly must be pushed fully into tube at all times when engine is operating.

2. Fill Fuel Tank - Use clean, fresh, lead-free or leaded "regular" grade automotive gasoline. DO NOT MIX OIL WITH GASOLINE.

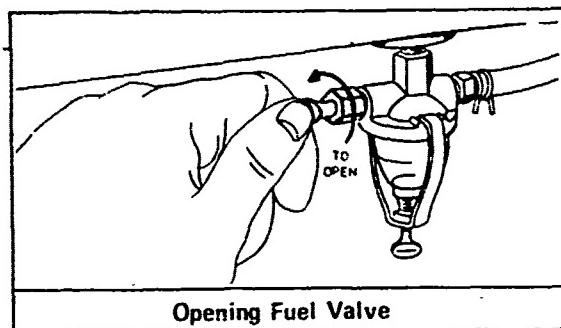
CAUTION: Gasoline is highly combustible. Do not store or use gasoline near an open flame or devices such as a stove, furnace, or water heater. Use gasoline only in well-ventilated areas or outdoors. Fill tank completely. Do not overfill or spill. Wipe up any spills immediately.

STARTING

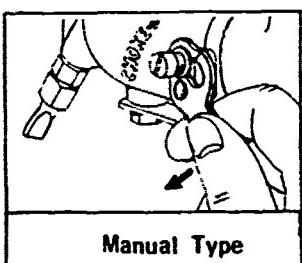
1. Be Sure the Stop Switch is away from Spark Plug



2. Open Fuel Valve

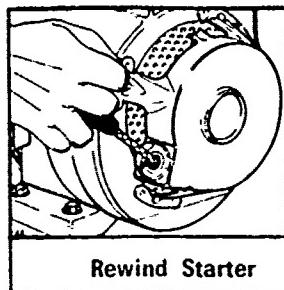


3. Choke the Carburetor



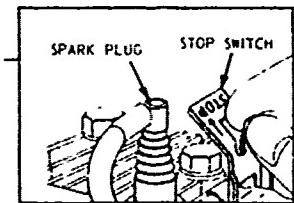
Move lever in direction of arrow to fully-closed choke position. Set governor control in normal operating position.

4. Start Engine



Grasp starter grip as illustrated and pull out cord two to three feet. Repeat if necessary with choke opened slightly. When engine starts, open choke gradually.

5. Allow engine to run a few minutes before loading generator.
6. Move selector switch to voltage required.
7. Stop Engine - Push the stop switch against end of spark plug.

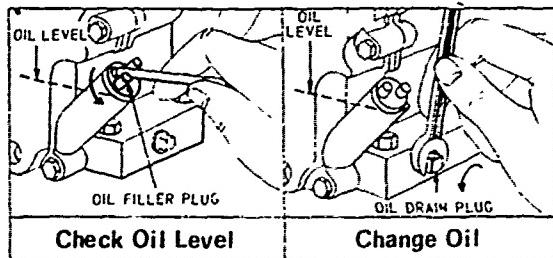


COLD STARTING HINTS

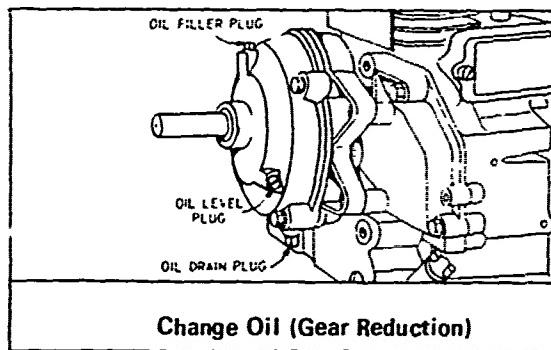
- Be sure to use the proper weight of oil for the temperature expected.
- Declutch all possible external loads.
- Set throttle at part-throttle position.
- A slightly richer fuel mixture, obtained by turning carburetor needle valve 1/8 turn counterclockwise, will usually improve cold starting.

MAINTENANCE

1. Check Oil Level regularly - after each 5 hours of operation. BE SURE OIL LEVEL IS MAINTAINED.
2. Change Oil after first 5 hours of operation. Thereafter, change oil every 25 hours of operation. Remove oil drain plug and drain oil while engine is warm. Replace drain plug. Remove oil filler plug or cap and refill with new oil of proper grade. Replace oil filler plug or cap.

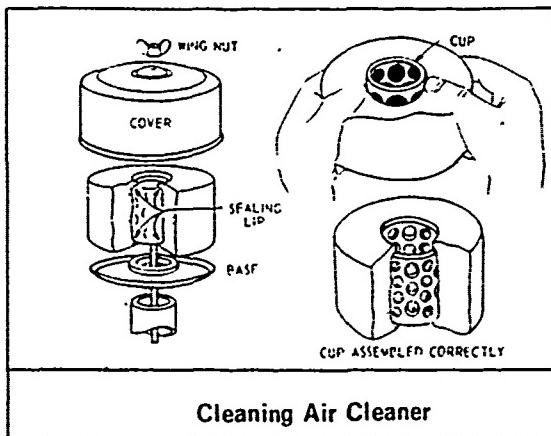


3. Change Oil (Gear Reduction optional) by removing oil level plug. Remove drain plug in bottom of gear case cover and drain oil every 100 hours of operation. To refill, remove oil check plug and oil filler plug and pour oil (same grade as used in crankcase) into filler hole until it runs out level check hole. Replace both plugs. Oil filler plug has a vent hole and must be installed on top of gear case cover.



4. Service Air Cleaner Regularly - Clean element every 25 hours; more often under dirty or dusty conditions.
 - Remove wing nut and cover.
 - Lift off foam element from base.
 - Push down foam element as shown, and pull out air cleaner cup.
 - a. Wash foam element in kerosene or liquid detergent and water to remove dirt.
 - b. Wrap foam in cloth and squeeze dry.

- c. Saturate foam in engine oil. Squeeze to remove excess oil.
- d. Put air cleaner cup inside element. Be sure sealing lip is over end of cup (top and bottom).
- Reassemble parts as shown. Screw wing nut down tight.



5. Allow engine to run a few minutes before loading generator.
6. Move selector switch to voltage required.

SAFETY AND OPERATING INSTRUCTIONS

1. Keep children and animals away from entire unit and power cords at all times.
2. Special care must be taken to avoid touching muffler, spark plug, engine, and yellow housing unless generator is stopped, and cooled off.
3. Exhaust fumes are dangerous. Operate generator only under well-ventilated conditions.
4. Do not operate generator or plug power cords into receptacles while in a damp or wet environment.
5. Stop engine before refueling or checking oil level.
6. Do not refuel a hot engine.
7. Avoid spilling gas on engine and surrounding area. If spillage occurs, DO NOT START GENERATOR UNTIL GAS HAS COMPLETELY DRIED UP.
8. Do not operate generator in area of flammable material.
9. Do not enclose unit, as it relies on free air circulation to cool engine and generator. Enclosing a unit can cause a risk of fire due to entrapped gas fumes and overheating which can result in damage to engine and surroundings.
10. Do not alter engine settings. The engine speed is controlled by a pre-set governor to deliver rated electrical power. In case of doubt, refer to your local Briggs & Stratton or McCulloch dealer.
11. To prevent accidental starting when servicing generator, ALWAYS remove cable from spark plug and hook terminal in V-notch provided in cylinder head cover.

The yellow housing contains the moving generator parts, and the ventilating holes in the back and front MUST BE KEPT CLEAR of obstructions.

12. Do not attempt to carry generator when engine is running because powerful gyroscopic forces make the generator hard to control.
13. Use only power cords that are suitable for use outdoors and are so marked.
14. Do not handle power cords that have damaged insulation or are wet.
15. Avoid operating generator on an incline. It should be located on a solid level surface for proper engine lubrication and operation.

If there is any indication that the generator could shift its position while running, THE USE OF TIE-DOWNS IS RECOMMENDED. The generator

mounting system is designed to insulate the generator from earth ground and to absorb engine vibration. DO NOT ALTER THE MOUNTING SYSTEM IN ANY WAY.

17. Federal, State, and other laws require the installation of special SPARK ARRESTER SCREENS in the exhaust muffler. Check the regulations that apply in your locality. Spark arrester screens are obtainable from your Briggs & Stratton dealer.

If considering connecting generator to existing wiring systems (house, barn, pumps, etc.), CONTACT A REGISTERED ELECTRICIAN to ensure proper, safe connection and compliance with local electrical and building codes.

WARNING: NEVER CONNECT GENERATOR to any circuit RECEIVING electrical power from any other source as this is likely to result in fire and damage to all electrical systems.

18. Radios, television sets, and other voltage-sensitive electronic equipment REQUIRE VERY LOW POWER. ALWAYS APPLY ADDITIONAL ELECTRICAL LOAD to your generator (for example, heater) to ensure that the generator voltage is not excessive for such applications.

E L E C T R I C H A N D S A W

A Skill, worm drive, electric hand saw is carried in the lower section of upper center compartment of the rear module, passenger side of vehicle. Rip, cross-cut, plywood and a multi-purpose blade are stored in the saw case.

The saw may be operated from any 60-cycle, 110-volt AC power source. For operator's safety, a grounded power source is essential.

OPERATION

1. Use an extension cord rated not less than is the supply cord attached to the saw.
2. Select and install blade best suited to cutting operation.
3. Set depth-of-cut adjustment. Loosen wing nut on left side of motor housing. Pull down base plate until amount of blade exposed below base plate corresponds to depth of cut desired. Tighten wing nut securely.
4. Set angle of cut adjustment. Loosen wing nut in front of motor housing. Tilt base plate to angle desired. First mark on adjusting arc is 0°, second is 15°, third is 30°, and fourth (maximum) is 45°.
5. Align saw to line of cut. There are two notches on the leading edge of the base plate. Deep notch is for sighting along line of cut with saw in vertical blade position. Shallow notch is for sighting at full 45° blade angle.
6. Grasp handle firmly at rear of motor housing in such a manner that index finger is over the power trigger, other fingers in the lower loop of handle and thumb aligned opposite trigger finger.
7. Grasp top handle firmly with other hand, fingers over top and thumb under handle.
8. With saw aligned to line of cut and blade clear of material, squeeze trigger fully closed. Allow motor to reach full rpm. Gently push saw forward through material.

MAINTENANCE

1. Wipe clean after each use, saw housing and blades.
2. Check level of lubricant after each use. Lubricant should just cover gears of saw as viewed through the gear case filler plug. Overfilling will result in overheating. Replenish with SKIL lubricant only.
3. Have dulled blades re-sharpened as soon as possible after use.
4. Inspect power supply cord for cracks, breaks, loose connection, or damaged plug end after each use. Have repairs/replacement performed by authorized service center.

R E S U S C I T A T O R

A Robertshaw Resuscitator, Model 900-002-175-03, is carried in the forward compartment of the front module, passenger side of vehicle. The resuscitator is fully compatible with cardiopulmonary resuscitation.

OPERATION

1. Open the oxygen cylinder (turn valve counter-clockwise fully).
2. Note oxygen contents on gauge. Replace cylinder if less than 2/3 filled (1400 psi).
3. Examine patient's mouth and nose; remove obstructions if feasible.
4. Place hand under patient's chin and tilt head back.
5. Place mask over patient's mouth and nose. Hold mask in place with thumb, forefinger and middle finger while tilting patient's head back with remaining fingers.
6. Using other hand, hold Demand Valve and Mask in place; depress the Manual Control Button and hold until patient's chest rises, then release.

Breathing rate for adults is 12-15 times per minute. For children, normal rate of breathing is 18-20 times per minute.

CAUTION:

Before disconnecting hose assembly or removing regulator from oxygen cylinder, be sure cylinder valve is in the CLOSED position (fully clockwise).

MAINTENANCE

After each use:

- Clean facepiece with mild solution of soap and water. Rinse thoroughly with clean water.
- If used on a patient suspect of communicable disease, disinfect facepiece with an agent recommended by local Medical Association.
- Annually, test operation of Demand Valve.

C O M B U S T I B L E G A S I N D I C A T O R

An Ambac-Bacharach "SNIFFER" Model G and batteries are carried in the small compartment immediately above the FOAM control panel of the front module. The instrument will detect any combustible gas or vapor in air. It may be used to distinguish between natural or manufactured gas (methane) and petroleum vapors (hydro-carbons).

Before testing or using the instrument, install eight "D" cell batteries according to diagram on battery holder.

OPERATION

1. Rotate the bulb 1/4 turn clockwise. Position right hand, palm down, rotating bulb with third and fourth fingers leaving index finger and thumb free to turn the VOLT ADJ knob.
2. With left hand, press the VOLT TEST button. Meter hand should point to the arrow on the scale. To adjust meter hand, lift and turn VOLT ADJ knob with right index finger and thumb.

NOTE: Both VOLT and ZERO ADJ knobs are equipped with clutches to prevent accidental rotation. The knobs must be lifted to engage the clutches while adjusting instrument.

3. Release VOLT TEST button.
4. Grasp bulb with right hand and rotate to a convenient operating position (usually less than 1/2 turn from initial rest position). Squeeze bulb two or three times to clear instrument.
5. Lift ZERO ADJ knob, run meter hand up and down scale a few times. Set meter hand at zero.

Instrument is now ready for sampling operations.

MAKING ANALYSIS:

1. Attach sampling hose to sample union.
2. While holding bulb in operating position, insert probe into space to be tested. Squeeze bulb several times. If combustible gas is present, meter hand will rise indicating concentration. Slight fluctuation of meter hand each time bulb is squeezed is normal.
3. After taking the reading, clear SNIFFER by placing probe in fresh air and squeezing bulb until meter hand returns to zero.
4. Release bulb to return to CFF position.

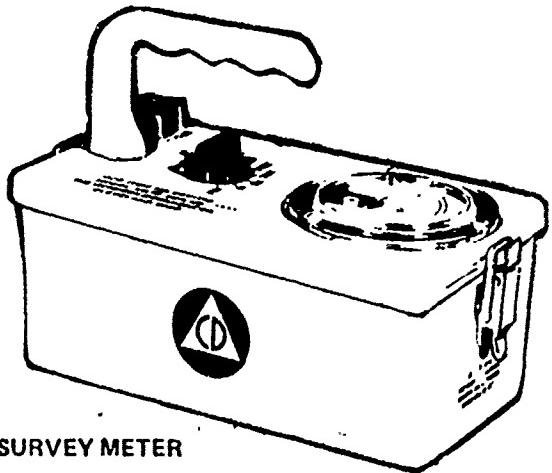
DISTINGUISHING BETWEEN FUEL TYPES:

2. Take a reading following standard operating procedure.
2. Clear the SNIFFER.
3. While pressing VOLT TEST button, set voltage to the .35 mark.
4. Repeat gas test.
 - If reading is not changed significantly, sample is mostly petroleum vapor.
 - If reading is reduced by about 50%, gas is a mixture of petroleum vapors and natural or sewer gas.
 - If reading is near zero, sample is mostly natural or sewer gas.

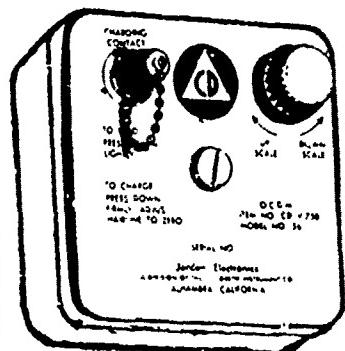
R A D E F K I T

**HOW TO USE YOUR RADIOLOGICAL INSTRUMENTS
(SURVEY METER AND DOSIMETER) TO FIND THE
BEST SHELTER AND TO MINIMIZE YOUR EXPOSURE
TO RADIATION**

READ ALL OF THE FOLLOWING INSTRUCTIONS **BEFORE** YOU ATTEMPT TO OPERATE THE INSTRUMENTS



SURVEY METER



DOSIMETER CHARGER



DOSIMETER

RADIOLOGICAL SURVEY METER

Your survey meter indicates the rate at which your body is being exposed to radiation. It is used to help you find the best shelter from radiation and to assist you to evaluate shielding improvements you may make in your shelter. The survey meter tells you the rate, in Roentgens per hour, at which you are being exposed to radiation from fallout just as the speedometer of an automobile tells you the rate of speed, in miles per hour, you are traveling. This survey meter will measure radiation from zero to 500 Roentgens per hour (R/hr).

figure 1

OPERATION OF SURVEY METER

1. Open case by unfastening two case clips, and remove case bottom.
2. Insert standard "D" cell (Figure 1) by placing + end of the battery against clip marked +.



3. Close case. Rotate selector switch to zero position (Figure 2). Allow instrument to warm up for about 2 minutes.

4. Rotate zero knob until pointer is on zero of meter scale (Figure 2).

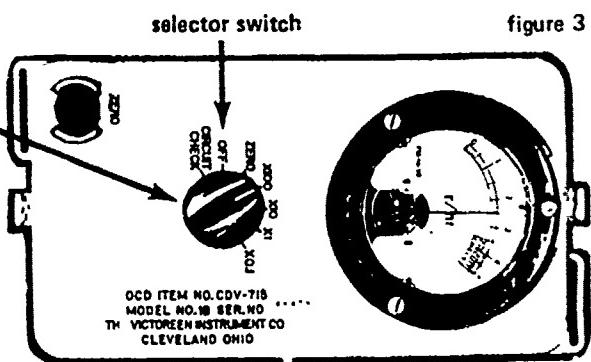
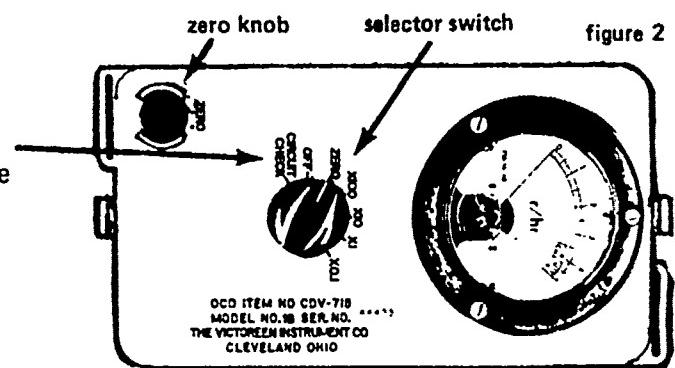
5. Rotate selector switch counter clockwise to circuit check position and hold. Meter should give an up-scale reading in or near red area marked "Circuit Check." If not, replace battery and repeat above steps until a better battery is found. Then you will be ready to measure the radiation rate. If after trying several batteries and performing steps 3 through 5 the meter fails to give an up-scale reading in or near the red area marked "Circuit Check", the instrument is faulty and should NOT be used.

6. Rotate selector switch clockwise to X100, X10, X1, or X0.1 switch position. Use switch position that produces highest on-scale meter reading.

7. Multiply meter reading by final switch setting to obtain exposure rate. EXAMPLE: Reading in Figure 3 is 2.5 (meter reading) times switch setting (which is times 100) for an exposure rate of 250 Roentgens per hour (R/hr.).

8. Survey (move instrument about) shelter to locate area giving lowest reading. This is the preferred area.

9. Improve this part of the shelter by placing furniture, books and other materials between area of lowest reading and areas of higher readings.

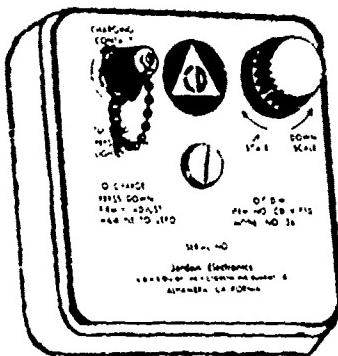


DOSIMETER



A dosimeter is used to measure your body's accumulated exposure to radiation. It measures the total amount of radiation your body is exposed to in a manner similar to the way an odometer in an automobile measures the total miles traveled. It is used together with the survey meter to determine and verify the value of your shelter. A pocket clip is provided so that it may be fastened to a person's garments.

DOSIMETER CHARGER



A Dosimeter Charger is used to charge or "ZERO" the Dosimeter.

OPERATION OF DOSIMETER AND CHARGER

1. Point the dosimeter at a source of light (figure 4) —even a match, a candle or a flashlight will do—and observe the position of the hairline indicator. If the line is visible and positioned less than mid-scale, record reading. If the line is at or above mid-scale or not visible, the dosimeter must be rezeroed. To rezero, a dosimeter charger is required.

2. To operate the Dosimeter Charger, loosen thumb-screw in the top or bottom center of the charger with a coin such as a dime and remove bottom case. Install battery (in correct way, +and-) and reassemble.

3. Position the charger on a flat surface such as a table. Unscrew the cap on the charging contact and place end of the dosimeter opposite pocket clip and eye piece on charging contact of charger. (See fig. 5)

4. Apply downward pressure and you should see a meter scale and a line while looking through the dosimeter. If no line is visible, rotate the control knob, located in the upper right hand corner—(figure 5), until a line appears.

5. Set line to or near zero (figure 6) by turning control knob (figure 5).

6. To read dosimeter at any time -- point at source of light and observe setting by looking through dosimeter (figure 4). Reading of figure 7 is 75 Roentgens. Your accumulated exposure in Roentgens is this number less the initial reading you recorded.

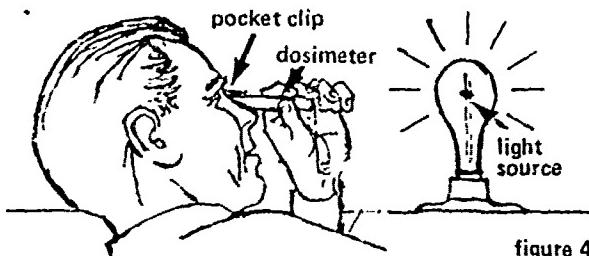


figure 4

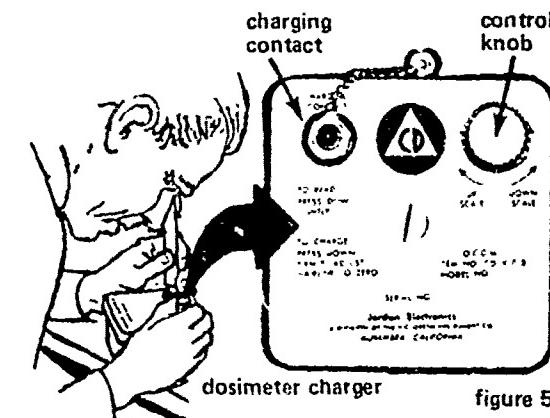


figure 5

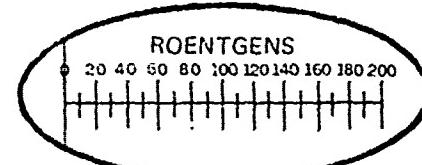


figure 6

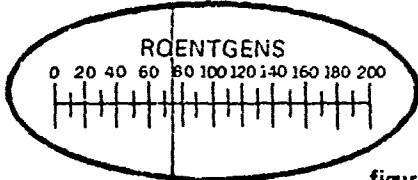


figure 7

PROTECTIVE MEASURES

During fallout deposition, all windows, doors, and nonvital vents in sheltered locations should be closed to prevent fallout particles from entering the shelter.

When radiation levels become measurable inside the shelter, make a survey of all shelter areas to determine the best protected locations. Repeat this procedure periodically. This information should be used to limit the exposure of shelter occupants by locating occupants in areas with lower levels of radiation. Experience and research have shown that if exposure is kept below a certain level, medical care will not be required for the majority of people.

SYMPTOMS OF RADIATION INJURY

Radiation causes injury to body tissue. If exposure is kept below lethal limits, the body is able to repair most of this injury over a period of time. Observable symptoms of radiation sickness are: nausea, vomiting, diarrhea, fever, listlessness, and a general feeling of fatigue. Some or all of these symptoms may appear within the first three days. They may then disappear, reappearing after a week or so, sometimes accompanied by bloody diarrhea and swelling of the nasal passages, mouth and throat. Generally speaking, the greater the exposure, the earlier the symptoms will appear and they will be more severe and last longer. Radiation sickness is not contagious; a person cannot "catch" radiation sickness from another person.

The severity of effects on individuals exposed to the same amount of radiation will vary widely. However, the following are estimated short-term effects on humans of external gamma exposures of less than one week.

Total Exposure	Visible Effect
0-50R	No visible effects.
50-200R	Brief periods of nausea on day of exposure. 50% may experience radiation sickness (nausea and vomit), 5% may require medical attention, no deaths are expected.
200-450R	Most members of the group will require medical attention because of serious radiation sickness. 50% deaths within two to four weeks.
450-600R	Serious radiation sickness in all members of the group, medical attention required. Death to more than 50% within one to three weeks.
Over 600R	Severe radiation sickness. 100% deaths in two weeks.

CARE OF RADIATION CASUALTIES

If a person becomes ill from exposure to radiation, he should be placed under the care of a physician or medical technician, if possible. In the postattack situation, medical care may be very limited. Care consists primarily of keeping the patient comfortable and inactive. Keep the patient clean and isolated from infectious diseases. The ill person should have liquids to replace the body fluids lost as a result of vomiting and diarrhea as soon as he can tolerate them. Nourishing foods should be given the patient since they are needed for recovery.

IN AN EMERGENCY, THE ABOVE GUIDANCE IS ADEQUATE FOR DETERMINING THE BEST AVAILABLE SHELTER AREA AND EXPECTED VISIBLE EFFECTS OF RADIATION INJURY. AFTER THE INITIAL READINGS ARE TAKEN THE "HANDBOOK FOR RADIOLOGICAL MONITORS" SHOULD BE USED TO OBTAIN ADDITIONAL INFORMATION. A COPY OF THIS HANDBOOK IS LOCATED WITH THE INSTRUMENTS.

OXYGEN-ACETYLENE CUTTING OUTFIT

A portable oxygen-acetylene cutting and welding outfit is carried in the forward compartment of the rear module (driver's side). As carried, the cutting tip is attached to the torch. An assortment of welding tips are carried on the rear bulkhead of the compartment. The cylinders, hose, regulators, and torch outfit is mounted upon a cylinder cart to facilitate movement. Hoses are 25 feet in length. Removal of the outfit from the compartment is a two-person job.

SET-UP PROCEDURES

1. OPEN valve of each cylinder 1/4 turn and CLOSE immediately.
2. Connect regulators directly to cylinders (wrench tight).
3. Connect hoses directly to regulators (red to acetylene; green to oxygen).
4. Connect hoses to torch (red to gas; green to oxygen). Be sure each of the torch inlet valves are fully closed.
5. Open oxygen cylinder slowly to full open. Set regulator to 2-4 psig.
6. Open acetylene cylinder valve slowly one quarter turn (keep wrench in place for quick shut-off). Set regulator to 2-4 psig.

CAUTION:

- Never stand directly in back or front of regulator when cylinder valve is open.
- Be sure no open flame is near when opening cylinders.

CUTTING:

Before starting to cut, be sure no flammable materials or gases are present. Have an extinguisher or charged hose line present. Protect any exposed victim with fire-resistive blanket (asbestos). Put gloves and goggles on.

1. Hold torch in one hand and friction lighter in the other.
2. Point tip away from yourself, any other person(s) and anything(s) flammable.
3. Open torch acetylene valve one-quarter turn and ignite gas with friction lighter.

4. Open acetylene valve slowly until flame clears tip about one-eighth of an inch.
5. Open oxygen valve slowly until flame is brought into a sharply defined blue cone (neutral flame condition).
6. Depress the cutting oxygen lever. Flame will change from neutral (sharply defined blue cone) to slightly feathered (carbonizing flame). Readjust oxygen valve until the flame is again neutral. Release oxygen cutting valve. You are now ready to cut.
7. Hold torch in a position where outer tip of flame cone is in contact with material to be cut.
8. When material around flame tip is bright cherry red, depress oxygen cutting lever.
9. Move torch slowly along line of intended cut in consonance with pre-heating of material.

S E C T I O N I I I

EQUIPMENT INVENTORY

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		1 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	CAB:					
2	Log Book, Vehicle			1	1	
3	Credit Card			1	1	
4	Flares, safety			3	3	
5	Handlights			2	2	
6	First Aid Kit			1	1	
7	Extinguisher, 2½ lb.			1	1	
8	Owner's Manual, Ford			1	1	
9	Owner's Manual, Cat			1	1	
10	FCC Transmitter Records			2	2	
11	Radio T/R Motorola	34391A	TG022R	1	1	
12	Radio T/R Motorola	34391	TG740N	1	1	
13	Control Head, Micor			1	1	
14	Unitrol			1	1	
15	Controller,Front Winch			1	1	
16						
17	FRONT MODULE (DRIVER SIDE) :					
18	2" Hose, 50' lg.			3	3	
19	1½" Hose, 50' lg.			3	3	
20	3" Hose, 50' lg.		.	3	3	
21	Nozzle, 1½" Comb. Foam Appl.			3	3	
22	Nozzle, 1½" Comb.			3	3	
23	Nozzle, 2½" Comb.			3	3	
24	Stokes Litter, ABS			1	1	
25	Backboard, Full			1	1	
26	Top Compartment:					
27	Radef Kit			1	1	
28	Comb. Gas Indicator w/metal, fiberglass probes	1		1	JW Model G	
29	Ear Protectors			1	1	
30						

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		2 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	FRONT MODULE (D.S.) Continued					
2	Center Compartment:					
3	Adapter, DM $2\frac{1}{2}$ " NS			2	2	
4	Adapter, DF $2\frac{1}{2}$ " NS			2	2	
5	Adapter, $1\frac{1}{2}$ " NSF x $1\frac{1}{2}$ " IPM			1	1	
6	Adapter, $1\frac{1}{2}$ " NSM x $1\frac{1}{2}$ " PCF			1	1	
7	Adapter, $1\frac{1}{2}$ " NS DM			1	1	
8	Adapter, $1\frac{1}{2}$ " NS DF			1	1	
9	Reducer, $2\frac{1}{2}$ " F x $1\frac{1}{2}$ " M NS			1	1	
10	Reducer, 1" IPF x 1" NSM			1	1	
11	Reducer, $1\frac{1}{2}$ " NSF x 1" IPM			1	1	
12	Adapter, $1\frac{1}{2}$ " NSF x $1\frac{1}{2}$ " PCM			1	1	
13	Adapter, $1\frac{1}{2}$ " IPF x $1\frac{1}{2}$ " NSM			1	1	
14	Adapter, 1" IPF x $1\frac{1}{2}$ " NSM			1	1	
15	Cap, Plug $2\frac{1}{2}$ " NSM			1	1	
16	Hose Straps, Sierra			4	4	
17	Spanners, hose			2	2	
18	Spanner, adjustable			1	1	
19	Spanner, Hard Suction			1	1	
20	Mallet, Rubber	.		1	1	
21						
22	PUMP MODULE:					
23	Operator's Panel:					
24	Spanner, Adj.			1	1	
25	Spanner, hose			2	2	
26	Adapter, 5" x $4\frac{1}{2}$ "			1	1	
27	Adapter, 5" x 4"			1	1	
28	Adapter, 5" x $2\frac{1}{2}$ "			1	1	
29	Suction Hose $2\frac{1}{2}$ "			1	1	
30						

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		3 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	TOP WELL:					
2	Broom, street			1	1	
3	Pump, floatable	34700	3881	1	1	
4						
5	REAR MODULE:					
6	TOP WELL:					
7	Lights, flood			2	2	Stanchion Mtd.
8	FRONT (DRIVER'S SIDE)					
9	Airbags, set			8	8	
10	Belt, safety			4	4	
11	Slings, safety belt			3	3	
12	Air bottle			1	1	
13	Regulator, Air			1	1	
14	Control/Relief Valve Assembly			1	1	
15	Hose, Air Bags			3	3	
16	Extinguisher, 20# MP Powder			1	1	
17	Oxy-Acy Welder, portable			1	1	
18	Goggles, welding			1	1	
19	Igniter, torch			1	1	
20	Torch, welding	.		1	1	
21	Regulator, O ₂			1	1	
22	Regulator, Acetylene			1	1	
23	Wrench, Acetylene Btl.			1	1	
24	Tips, cutting			1	1	
25	Tips, welding			4	4	
26	Blankets, asbestos			1	1	
27	Gloves, welding			1	1	
28						
29						
30						

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
OES SACRAMENTO		HRF-1		8/14/80		4 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	OVER WHEEL COMPT (DRIVER SIDE):					
2	Hammer, Sledge, 12 lb.			1	1	
3	Hammer, Sledge, 8 lb.			1	1	
4	Hammer, Sledge, 4 lb.			2	2	
5	Hammer, Sledge, 2 lb.			1	1	
6	Hammer, Sledge, 1 lb.			1	1	
7	Bar, wrecking, 16"			1	1	
8	Bar, wrecking, 24"			1	1	
9	Bar, wrecking, 30"			1	1	
10	Bar, wrecking, 36"			1	1	
11	Ram Bar			1	1	
12	Halligan Tool			1	1	
13	Shovels, Foldg w/pick			3	3	
14	Axe, Crash			1	1	
15	Axe, Pry			1	1	
16	Axe, Pickhead			1	1	
17	Axe, Flat Head, 6#			1	1	
18	Axe, Flat Head, 3#			1	1	
19				-	-	-
20	UPPER CENTER (DRIVER SIDE):	.				
21	Smoke Ejector			1	1	
22	Fire Blanket			2	2	
23	Air Bottles			2	2	
24	Cart, folding			1	1	
25	Covers, Salvage			2	2	
26	Bucket, 20 qt.			1	1	
27	Bucket, 12 qt.			1	1	
28						
29						
30						

OFFICE OF EMERGENCY SERVICES

FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:	UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
OES SACRAMENTO	HRF-1		8/14/80		5 OF 11
ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1 UPPER REAR (DRIVER SIDE):					
2 Flare Kit, Veh.			1	1	
3 Wrench, Lug; kit			1	1	
4 Line Gun Kit, Bridger			1	1	
5 Cribbing, 4"x4"x22"			24	24	
6 Cribbing, 2"x4"x22"			24	24	
7 Wedges, 2"x4"x12"			10	10	
8					
9 LOWER REAR (DRIVER SIDE)					
10 Wheel Chocks			2	2	
11 Stabilizer Plates			2	2	
12 Adapter, 5"NS x 5" Storz			1	1	
13 Chain, #7 w/hook, 6'			2	2	
14 Chain, Med.#7 x 20' w/hooks			1	1	
15 Chain, Hvy #8 x 20' w/hooks			1	1	
16 Clevis w/pin, 3"			2	2	
17 Clevis w/pin, 2"			2	2	
18 Snatch Block, 3"			1	1	
19 Snatch Block, 4 $\frac{1}{2}$ "			1	1	
20 Snatch Block w/hook, 4 $\frac{1}{2}$ "			1	1	
21 Gin Pole Tip Assembly			1	1	
22 Pins, front boom			2	2	
23 Pulley Assembly, front boom			1	1	
24 Jack, hyd. 20-ton low rise			2	2	
25 Jack, hyd. 20-ton std. rise			2	2	
26 Jack, hyd. handles			4	4	
27 Griphoist Kit			1	1	
28 Double Hook Assembly, Chain			2	2	
29 Siamese 2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "x2 $\frac{1}{2}$ "			1	1	
30 Wye, gated 2 $\frac{1}{2}$ " x 2 $\frac{1}{2}$ " x 2 $\frac{1}{4}$ "			1	1	
31 Nozzles, Playpipe Assembly, 2 $\frac{1}{2}$ "			2	2	

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		6 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	TAILBOARD:					
2	Strainer, 5"			1	1	
3	Hose Clamp, Hebert			1		
4						
5	TOP COMPARTMENT (DRIVER SIDE):					
6	Suction Hose 5" Hard, 10'			2	2	
7	Ladder 10' folding			1	1	
8	Pike Pole, 9' fiberglass			1	1	
9						
10	CENTER REAR:					
11	Masks, Survivair			3	3	
12	Bottles, Air			5	5	
13	Safety Belts, Tailboard			2	2	
14						
15	TOP (PASSENGER SIDE):					
16	Ladder, 24' ext.			1	1	
17	Ladder, 14' roof			1	1	
18	Braces, front boom			2	2	
19	Poles, rear boom			2	2	
20	Boom, side ext. 9'	.		1	1	
21						
22	UPPER REAR (PASSENGER SIDE):					
23	On Door:					
24	Wrenches, spark plug			3	3	
25	Wrench, end			1	1	
26	Screwdriver, 4" blade			1	1	
27	Screwdriver, 3" blade (fine)			1	1	
28	Pin, chain saw			1	1	
29	Belts, drive			6	6	
30	Chain, Homelite Saw			1	1	

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		7 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	UPPER REAR (P.S.) Continued:					
2	On Door (Cont'd):					
3	Can, gasoline, 1 gal.			1	1	
4	Saw, 12" Partner K-65			1	1	
5	Saw, 14" Partner K-1200			1	1	
6	Saw, 16" Chain, Homelite			1	1	
7	Blades, 12" all purpose			2	2	
8	Blade, 12" Abrasive Wheel			1	1	
9	Blade, 14" all purpose			1	1	
10	Blades, 14" Abrasive wheel			2	2	
11	Face Shields			3	3	
12	Ear Portectors			2	2	
13						
14	UPPER CENTER (PASSENGER SIDE):					
15	Saw, Skil Worm Drive Kit			1	1	
16	Air Chisel Rescue Kit			1	1	
17						
18	LOWER REAR (PASSENGER SIDE):					
19	Blankets, wool			6	6	
20	Hook & Clevis Assembly, Chain			2	2	
21	Hurst Pins, long			2	2	
22	Hurst Pins, short			2	2	
23	Hurst Ext. Hose, Pr.			2	2	
24	Hurst Chain w/hook			1	1	
25	Hurst Shear attachment			1	1	
26	Hurst Power Unit Air Filters			2	2	
27	Hurst Hyd. fluid, Qts.			4	4	
28	Fuel Stabilizer, Qts.			1	1	
29	2 Cycle Oil, Pts.			1	1	
30	Piston Lube, Bottle			1	1	

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION: SACRAMENTO OES		UNIT NUMBER HRF-1		DATE OF COUNT 8/14/80		SHEET NUMBER 8 OF 11
	ARTICLE	DBCAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	FORWARD (PASSENGER SIDE):					
2	Generator, 3.3 KW	34398	11-33779	1	1	
3	Adapters, Elect. 3 Pr. Bynt x 3T			2	2	
4	Adapters, Elect. 3 Pr. TL x 3 Bynt			2	2	
5	Ext. Cord 14x3x100'			1	1	
6	Ext. Cord 14x3x50'			1	1	
7	Ext. Cord 14x3x25'			1	1	
8	Ext. Cord 14x3x15'			1	1	
9	Reel, Ext. Cord			1	1	
10	Blocks, Double			2	2	
11	Rope, 3/4" x 200'			1	1	
12	Shovel, long handle, Sq. Pt.			1	1	
13	Shovel, long handle, Rd. Pt.			1	1	
14	Hot Stick, 10'			1	1	
15	Wire Cutters, HV			1	1	
16	Gloves, HV, pr.			1	1	
17	Pliers, Side Cutters, pr.			2	2	
18						
19	UPPER CENTER (PASSENGER SIDE):					
20	Hose, Air - coiled	.		1	1	
21	Vests, safety			3	3	
22	Lights, flood (Circle-D)			3	3	
23	Cord, elect, 12" ext.			3	3	
24	Rope, 5/8" x 200'			2	2	
25	Rope, 5/8" x 125'			1	1	
26	Rope, 5/8" x 100'			1	1	
27	Rope, 5/8" x 50'			1	1	
28	Climbing Spikes, pr.			1	1	
29	Lights, helmet mount			3	3	
30	Respirators, dust			3	3	

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:	UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES	HRF-1		8/14/80		9 OF 11
ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1 UPPER CENTER (P.S.) Continued					
2 Goggles, dust			3	3	
3 Caps, safety			3	3	
4 Suits, Chemical			3	3	
5					
6 OVER WHEEL (PASSENGER SIDE):					
7 Hyd. Rescue Kit "Pushmaster"			1	1	
8 Jacks, high lift			2	2	
9 Shovel, D hndl., sq. pt.			1	1	
10 Shovel, D hndl., rd. pt.			1	1	
11 K-Bar-T Tool			1	1	
12 Pipe Wrench, 20"			2	2	
13 Bolt Cutters, 30"			1	1	
14 Bolt Cutters, 16"			1	1	
15 Hay Hook			2	2	
16					
17 LOWER REAR (PASSENGER SIDE):					
18 Hurst Tool Power Unit	6656		1	1	
19 Hurst Tool	34416	09268	1	1	
20 Hurst 150 Cutter		.	1	1	
21 Hurst Metal Cutter Directional Tip			1	1	
22 Hurst Metal Cutter Tip			2	2	
23					
24 RUNNING BOARD:					
25 Ext. CO ₂ , 5lb.			1	1	
26 Ext., Met-L-X, 20 lb.			1	1	
27					
28					
29					
30					

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION: SACRAMENTO OES		UNIT NUMBER HRF-1		DATE OF COUNT 8/14/80		SHEET NUMBER 10 OF 11
	ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION
1	FRONT MODULE:					
2	Top Rear (Pass. Side):					
3	Hammer, 20 oz. Framing			1	1	
4	Hacksaw, Adj.			1	1	
5						
6	TOOL BOX:					
7	Pliers, Offset, 12"			1		
8	Pliers, Offset, 10"			1	1	
9	Pliers, wire cutter, 6"			2	2	
10	Wrench, Adj. End, 6"			1	1	
11	Wrench, Adj. End, 8"			1	1	
12	Wrench, Adj. End, 10"			1	1	
13	Wrench, Adj. End.,15"			1	1	
14	Chisel, 1x8			1	1	
15	Chisel, 7/8 x 12			1	1	
16	Screwdrivers, Blad, Asst d:					
17	Phillips #2			1	1	
18	Keystone 1/8" x 3 $\frac{1}{2}$ "			1	1	
19	Cabinet 3/16" x 6"			1	1	
20	Square 1/4" x 1 $\frac{1}{2}$ "	.		1	1	
21	Keystone 1/4" x 6"			1	1	
22	Square 5/16" x 6"			1	1	
23	Screwdrivers, Phillips:					
24	#0-1/8" x 2 $\frac{1}{2}$ "			1	1	
25	#1-3/16" x 3 $\frac{1}{2}$ "			1	1	
26	#2-1 $\frac{1}{4}$ " x 1 $\frac{1}{2}$ "			1	1	
27	#2-1 $\frac{1}{4}$ " x 4"			1	1	
28	#3-5/16" x 6"			1	1	
29	Wrenches, Com End:					
30	1/4", 5/16", 3/8", 7/16",			1 ea.	1 ea.	
31	1/2", 9/16", 5/8", 11/16",			1 ea.	1 ea.	
32	3/4", 13/16", 7/8", 15/16"			1 ea.	1 ea.	

OFFICE OF EMERGENCY SERVICES
FIRE AND RESCUE DIVISION

PROPERTY INVENTORY SHEET

LOCATION:		UNIT NUMBER		DATE OF COUNT		SHEET NUMBER
SACRAMENTO OES		HRF-1		8/14/80		11 OF 11
ARTICLE	DECAL	SERIAL	RECORD	ACTUAL	EXPLANATION	
1 CENTER COMPARTMENT (PASSENGER SIDE):						
2 Bottle, Air			1	1		
3 First Aid Kit, Paramedic			1	1		
4 Burn Kit, Short			1	1		
5 Resuscitator			1	1		
6 Center Punch, Spring Loaded			2	2		
7 Scissors, First Aid			2	2		
8 Hammer, Pick Head			1	1		
9 Gloves, Rubber, 3 pr.			3	3		
10 Backboard, Short			1	1		
11 Rope, Rescue 200' x 1/2"			1	1	Kernmantle	
12 Caribbeaners, 12mm Steel			4	4		
13 Caribbeaners, 8 mm Alum.			6	6		
14 Gibbs Ascenders			2	2		
15 Figure-8 Descenders, Lg.			2	2		
16 Rescue Pulleys			2	2		
17 Descenders, Hobbs			2	2		
18 Brake Bar, Rack			1	1		
19 Brake Bars, Steel			6	6		
20		.				
21 HOSE BED:						
22 Nozzles, 1½" Comb.			2	2		
23 Hose, 1½" DJRL, 50' lg			7	7		
24 Hose, 2½" DJRL, 50' lg			6	6		
25 Hose, 5" Lt.Wt., 100' lg.			3	3	W/Storz Couplings	
26 Wye, Gated, 2½"x1½"x1½"			1	1		
27						
28						
29						
30						

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